THE IRON TRADE REVIEW

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Independents Lead in Making Price Advances

Action Taken Without Blare of Trumpets—Railroads Inquiring for Rails for Next Year—Greater Strength in Pig Iron

Prosperity, with all the indications of permanence, continues in increasing volume. Prominent independent companies took the lead in the most important price advance of the week, that of $1 per ton on shapes, plates and bars. The Steel Corporation and the smaller independent companies generally have adopted the new schedule. This price advance was made very quietly for several reasons. There is a general feeling that the one peril in the present happy condition of affairs is the possibility of a too rapid advance in prices. Some companies also desired the privilege of selling at recent quotations for the last half of the year. A still further reason for not more quickly acquiescing in the new quotations was the feeling on the part of some sellers that they would have the effect of increasing specifications on low priced contracts, which are already coming in very rapidly. Although the earnings of the Steel Corporation for the second quarter show a very comfortable increase over those for the first quarter, they furnish very clear evidence of the low prices at which sales were made during the second quarter. The shipments of the Steel Corporation for the first half of the year will amount to about 6,000,000 tons, the highest on record.

Pig Iron

The pig iron market shows greater strength throughout the country and in some centers noteworthy advances have taken place. In the Pittsburgh district, from 25,000 to 30,000 tons of basic have been sold at $13.50, valley, and from 2,000 to 3,000 tons at $13.75. In the Philadelphia market, 3,000 tons of basic were sold at $15.70, delivered, the highest price paid in that section since July, 1910. In New York, the market has been rather quiet, but one large purchaser has taken from 15,000 to 20,000 tons of special analysis iron for delivery after the first of the year. In the central west, some buyers are sounding the market for the first quarter of next year, but sellers are very cautious about making quotations. Furnaces are hopeful of obtaining next year a substantial advance over present quotations. One Cleveland furnace has practically withdrawn from the market by advancing its quotation to $14, furnace, for basic, malleable and No. 2 foundry for delivery this year outside of the city. Some Hanging Rock furnaces are also indifferent as to business for the remainder of this year. The market continues sluggish at Cincinnati, but prices are firm.

Railroad Buying

Inquiries for about 300,000 tons of rails for delivery next year have appeared in the market. This interest of the railroads shown at an unusually early date results from difficulties that have been encountered in getting rail shipments as promptly this year as railroads have desired, especially the open-hearth product. There are some lines expressing willingness to take rails in January and February, which is considerably earlier than according to the usual custom. This concession will help the rail mills in distributing the output to best advantage. There are still many scattered orders for rails being placed. All indications point to further heavy buying of cars and some leading authorities estimate that orders this year for equipment will be the heaviest since 1907. The Illinois Central has bought additional cars and orders placed in the Chicago district amount to about 2,000. The government railways of Japan have placed 5,000 tons of steel for transmission towers for electrification. This order was taken by the United States Steel Products Co., a subsidiary of the Steel Corporation.

Coke

The blast furnaces have won their long contest with the coke producers so far as breaking the $2.50 quotation, which was stubbornly adhered to for contract coke by nearly all of the large producers, but reductions in prices are not heavy and the inability of ovens to increase their production makes it improbable that the low prices hoped for by furnaces will prevail. The action of some coke producers in breaking away from brokers and deciding to sell through a new selling agency has aroused much interest, but it is doubtful whether its effect will be as important as has been predicted in some quarters.

PITTSBURGH

Great Activity As Prices Advance

Office of THE IRON TRADE REVIEW,
2148-49 Oliver Bldg., July 30.

The iron and steel market during the past week reached a point where it could be safely termed a sellers' market. The buying movement has been so heavy that it has become a question of deliveries rather than price in the making of sales. The week was more than ordinarily interesting because of the advance in so many finished lines with the reported congestion of orders on the mill books. Pipe, merchant bars, cold rolled shafting, plates and shapes, and track material advanced from $1 to $2 a ton, and the market seems to have sustained the new price without effort. Pig iron has also moved upward, and the buying movement now started has brought about an increase in prices varying from 10 to 25 cents, with some large tonnages placed, and the future promises further advances.

Pig Iron.—The pig iron market is one of the most active and is showing more rapid changes than any other line of the iron and steel trade during the past week. Within four days, 25,000 to 30,000 tons of basic have been sold at $13.50, valley. Some of the most important producers are sold to the end of the year and are practically out of the market. There has been a sale of between 2,000 and 3,000 tons of basic iron at $13.75, valley, and conservative furnace men believe that the last of $13.50 basic has been taken. The situation is the same, to some extent, on both foundry and malleable, foundry having been sold freely at $13.50 for prompt shipment, and $13.60 to $13.65 for fourth quarter. Malleable has advanced from 10 to 15 cents on sales during the past few days. There is still an inquiry pending for 25,000 to 30,000 tons of basic that is expected to be placed as actual business within a few days. Bessemer pig iron has sold up to 1,000 tons at $14.50 and is extremely scarce. We quote the market as follows:

(Prompt Shipment.)

Bessemer, valley	$14.40
Bessemer, Pittsburgh	15.30
Basic, valley	13.75
Basic, Pittsburgh	14.65
No. 2 foundry, Pittsburgh	14.50
Gray forge, Pittsburgh	14.15
Malleable, Pittsburgh	14.40

(Fourth Quarter.)

Bessemer, valley	$14.50
Bessemer, Pittsburgh	15.40
Basic, Pittsburgh	14.65
No. 2 foundry, Pittsburgh	14.55
Gray forge, Pittsburgh	14.15
Malleable, Pittsburgh	14.50

Ferro-Alloys.—The demand for all alloys is very strong. The situation regarding ferro-manganese is becoming acute. Only a few thousand tons of manganese remain unsold in this country, and while a large number of consumers are fairly well covered for the remainder of the year, their requirements have increased so materially that many are in the market for odd lots far in advance of their expected appearance. Nominally, manganese is quoted at $51, Baltimore, for forward shipment, and $51.50 to $52 on prompt shipment. Fifty per cent ferro-silicon is firm at $72.50 with very little offering.

We quote ferro-manganese at $51.50 to $52, Baltimore for prompt delivery; $51.00 for forward delivery. The freight rate from Baltimore to Pittsburgh is $1.95 per ton.

Fifty per cent ferro-silicon is quoted nominally at $72.50, Pittsburgh, for prompt and $70 forward delivery; 12 per cent, $22; 11 per cent, $21; 10 per cent, $20, f. o. b. Globe, Jisco and Ashland furnaces. The freight rate to Pittsburgh is $1.90. The foreign grades are held at $1 or more a ton over domestic prices.

On ferro-titanium we quote 8 cents per pound for carload lots; 10 cents per pound for 2,000 pound lots and over, and 12½ cents per pound in lots up to 2,000 pounds.

Plates.—The demand for plates continues very heavy, specifications during the past week being somewhat larger, and makers so far behind in deliveries that premiums for prompt shipment have increased on such tonnage as could be placed. As high as $4 has been paid on prompt material. The congested condition of the plate mills being so well known, announcement by leading plate makers this week of an advance throughout the list of $1 a ton caused little surprise. In some cases, the advance was rather expected to be higher. All the large independent makers also advanced on shapes, the new quotation being 1.35c, Pittsburgh, on this product. One inquiry from the Pittsburgh & Lake Erie railroad calling for 1,000 55-ton steel hopper cars, and another for 1,000 cars for the Lehigh Valley railroad are now in the hands of makers, and are expected to be placed within a few days. The award of the Boston-Albany car order brought 3,000 cars to the American Car & Foundry Co., 800 general service cars to the Pressed Steel Car Co., and 400 flat cars to the Standard Steel Car Co; 1,000 box cars were also awarded to the Keith Car & Mfg. Co. An inquiry from the Buffalo, Rochester & Pittsburgh, which is yet to be placed, calls for 500 50-ton gondolas; 500 50-ton box cars; 100 40-ton automobile cars, and 100 40-ton refrigerator cars. The market is strong for all lines of plain material. Fabricators are specifying freely, and great difficulty is being met in making shipments on contract time. One large plain material order reaching Pittsburgh mills calls for 14,000 tons for the American Express Co. building in New York, which will be fabricated by the American Bridge Co.

We quote the market as follows:

Tank plates, ¼ inch thick, 6¼ to 100 inches, 1.30c to 1.35c. Extras are as follows per 100 pounds: Boiler and flange steel plates, 0.10c; A. B. M. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.30c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches 0.10c; circles, 0.20c. Plates in widths over, 100 inches up to 110 inches 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1c. Gages under ¼ inch to and including ⅜-inch plate on thin edge, 0.10c; under ⅜ and including No. 9, 0.25c. Five cents extra for less than carloads. Terms net cash in 30 days.

Sheets. — The demand for sheets continues very strong. Sheet manufacturers are generally complaining of a shortage of steel, and this condition seems to promise a further interference with the full production of sheets that would be warranted by the existing demand. Most sheet mills are behind on deliveries, and if they are not short of steel they are short of labor, or both, and in taking new business are very firm at the maximum price of 2.05c for No. 28 gage black sheets. Galvanized sheets are also very firm at 3.15c for No. 28 gage.

We quote the market as follows:

Flat Sheets.

Black Sheets.—Nos. 10-12 gage, $1.70 per 100 pounds; Nos. 13-14 gage, $1.75; Nos. 15-16 gage, $1.80; Nos. 17-21 gage, $1.85; Nos. 22-24 gage, $1.90; Nos. 25-26 gage, $1.95; No.

27 gage, $2.00; No. 28 gage, $2.05; No. 29 gage, $2.10; No. 30 gage, $2.20.

Tin mill sizes base 5 cents per 100 pounds under these prices.

Blue Annealed.—Nos. 3-8, $1.40 per 100 pounds; Nos. 9-10, $1.45; Nos. 11-12, $1.50; Nos. 13-14, $1.55; Nos. 15-16, $1.65.

Galvanized.

Nos. 10-11 gage, $2.15 per 100 pounds; Nos. 12-14 gage, $2.25; Nos. 15-16 gage, $2.40; Nos. 17-21 gage, $2.55; Nos. 22-24 gage, $2.65; Nos. 25-26 gage, $2.85; No. 27 gage, $3.00; No. 28 gage, $3.15; No. 29 gage, $3.25; No. 30 gage, $3.45.

Roofing Sheets.

Net extras on all gages per 100 pounds. Corrugated 2-inch, 2½-inch, 3-inch and 5-inch corrugation, 5c; 2 V crimped without sticks, 5c; corrugated 1¼-inch corrugation, 10c; 3 V crimped without sticks, 10c; pressed standing seam with cleats, 15c; plain roll roofing with or without cleats, 15c.

Painted Roofing.

12 to 18 gage, inc., 5c; 19 to 24 gage, inc., 10c; 25 to 28 gage inc., 15c.

Tin Plate.—Tin mills are all operating to capacity where they have a labor supply and raw material. Specifications are the heaviest in many months, and inquiries for new business for the fourth quarter now being received indicate a continued activity on the same broad scale of operations. Three and four weeks are the average delay on deliveries. We quote the market as follows:

Coke tin plate, 100-pound basis, 14 x 20, $3.50, f. o. b. mill, Pittsburgh district.

Rails and Track Material.—Specifications on existing contracts for rails continue very heavy, standard sections being confined to the open-hearth steel rail almost to the exclusion of the Bessemer. The leading interest is able to make fairly prompt deliveries on Bessemer rails, not more than four weeks being required, but on open-hearth it is sold so far ahead that deliveries are a serious problem to be adjusted. In the light rail trade, July is expected to go ahead of any month of the present year. The recent advance in prices by the leading interest has been followed by all independent makers, and the specifications that are now coming in indicate that buyers with prices below the present market are not allowing any cancellations to cut off their supply. In track material, the market is a seller's market entirely, railroad spikes being very strong, and manufacturers far behind on shipments. While nominally the market is 1.60c for standard railroad spikes, the majority of the tonnage that is booked today is at 1.65c.

The market is quoted as follows, with the base price on open-hearth steel rails 1.34c per pound at the mill:

Fifty-pound and heavier, 1.25c per pound; carloads and less than 500 tons, 1.34c per pound; light rails on base weight of 40 to 45 pounds; 1.19c, the schedule on the other weights being irregular and subject to negotiations; angle bars for standard sections, 1.50c, Pittsburgh; track bolts, 2.00c to 2.10c, Pittsburgh.

Railroad Spikes.

4½, .5 and 5½ and 9-16	$1.60 to 1.65
3, 3½, 4, 4½ and 5 x ½	.10
3½, 4 and 4½ x 7-16	.20
3, 3½, 4 and 4½ x ⅜	.30
2½ x ⅜	.40
2½, 3 and 3½ x 5-16	.60
2 x 5-16	.80

Steel.—Semi-finished steel is so scarce that the market has drifted into the hands of the sellers, and prices have advanced on the basis of earliest deliveries almost exclusively. For small open-hearth billets for prompt shipment and for fourth quarter, $24 has been paid during the past week. Some of the larger makers are quoting $25 on open-hearth sheet bars for the fourth quarter and on small billets. Small Bessemer billets and sheet bars are quoted at $23 and $23.50, Pittsburgh and Youngstown, and this price seems to be general on new business for the remainder of this quarter, while inquiries for the fourth quarter show an upward trend, and a heavier demand is in prospect. Forging billets are strong at $28 and $29. The leading interest is out of the market on all semi-finished lines of steel, and has been continuously so for seven months. From present indications, it will remain so for the remainder of this year. Leading independent makers of steel, who are usually large sellers, have been quietly buying where they could for their own needs.

Bessemer 4 x 4 billets with 0.25 carbon and less are quoted at $23.00, with the usual extra for size and analysis, and open-hearth rolling billets, $23.50 to $24.00. Bessemer sheet and tin bars are quoted at $23.00, and open-hearth sheet bars are quoted at $23.50 to $24.00, f. o. b. Pittsburgh and Youngstown for third quarter, with full freight to destination added. Forging billets are quoted at $28.00 to $29.50, Pittsburgh.

Hoops and Bands.—The demand for steel hoops is the heaviest in years. The leading interest for July will show the largest tonnage in its history in the production of steel hoops with orders unfilled, and so far behind on shipments that new business is rather being discouraged. The same condition affects the band market.

We quote the market as follows:

Hoops in carload lots, $1.40c, Pittsburgh; in less than carload lots, 1.50c; bands 1.25c, base, with net extras, as per standard steel.

Merchant Bars.—Merchant bars are in heavy demand, and premiums are being paid for prompt shipment, these premiums running from $1 to $2 a ton. The leading interest is far behind on deliveries, and some of the larger independents have already advanced the minimum price on merchant bars to 1.30c, Pittsburgh. This new price will likely rule generally within the next few days, as the market is still below the normal basis for merchant bars. The sale of bars is so heavy, and the tonnage waiting deliveries so far beyond the present capacity that the new price of 1.30c is regarded as only temporary. Steel shafting, during the past week, was advanced by all leading makers one point, the new discount being 64 per cent for carload lots and more, and 59 per cent for less than carload lots. Most of the makers are oversold for some time ahead. The iron bar market is very strong, 1.40c being the minimum, and some sales were made at 1.45c. Mills are also behind on deliveries of iron bars. We quote the market as follows:

Common iron bars, 1.40c to 1.45c, Pittsburgh; Bessemer and open-hearth steel bars, 1.25c; plow and cultivator, 1.25c; channels, angles, zees, tees, under 3 inch, 1.25c, all f. o. b. mill. The following differentials are maintained on steel: Less than 2,000 pounds of a size, 0.35 advance. Cold rolled, and ground shafting, 64 per cent off in carloads and 59 per cent in less than carloads, delivered in base territory.

Muck Bar.—New buying of muck bar is not extensive, but makers are running on contracts and are not able to meet the demand. The price has advanced for new business from $1 to $2 a ton. Prompt shipment muck bar is from $30 to $31, Pittsburgh. We quote $30 to $31, Pittsburgh, for muck bar.

Structural.—A good many builders are in the market for structural material. Fabricators throughout the Pittsburgh territory are well filled up with tonnage for the remainder of the year. This very satisfactory condition has brought about a much stronger price for fabricated material, with prospects of a further upward movement in the price for the immediate future, plain material being so much firmer, many of the independent makers advancing prices and buyers are offering premiums for prompt shipment of from $1 to $2. Industrial, railroad and commercial building enterprises are all coming out on a large scale. The Pittsburgh territory is particularly active in the smaller tonnages.

We quote the market as follows:

Beams and channels, 15 inches and under, zees, 1.30c to 1.35c; tees, 1.30c to 1.35c; angles, from 3 to 6 inches 1.30c to 1.35c; over 6 inches, 1.40c to 1.45c; universal and sheared, 1.35c to 1.40c; over 15 inches, 1.40c

to 1.45c; plates, 6¼ inches wide and wider, 1.40c to 1.45c.

Merchant Pipe. — The demand for steel line pipe continues quite active. Between 40 and 50 miles of large sized pipe are included in inquiries now before the makers, all of which came out in face of the advance in the card price during the past week.

The leading interest during the past week made a general advance on all steel pipe of one point, or $2 a ton. The price is being firmly maintained. The effect has been to advance iron pipe by prominent independent manufacturers, but no uniform change of price has as yet developed. It is believed, however, that by the end of the week iron pipe manufacturers will have advanced or followed the steel makers quite generally by one point higher quotations. We revise the official discount to jobbers, subject to the usual preferential discount to the larger buyer as follows:

Iron and Steel Pipe Basing Prices.

	Steel.		Iron.	
	Butt weld.			
	Black.	Galv.	Black.	Galv.
⅛, ¼ inch	72	52	68	48
⅜ inch	73	63	69	53
½ inch	76	66	72	59
¾ to 1¼ inch	80	71	75	64
2 to 3 inches	81	73	76	65
	Lap weld.			
2 inches	77	70	72	63
2½ to 4 inches	79	72	74	66
4½ to 6 inches	78	70	73	65
7 to 12 inches	76	66	71	61
13 to 15 inches	53	..	47	..
Extra Strong, Plain Ends.				
			Butt weld.	
⅛, ¼, ⅜ inch	68	58	65	55
½ inch	73	67	70	63
¾ to 1¼ inch	77	71	74	65
2 to 3 inches	78	73	75	66
Extra Strong, Plain Ends.				
			Lap weld.	
2 inches	74	68	71	63
2½ to 4 inches	76	70	74	66
4½ to 6 inches	75	69	72	65
7 to 8 inches	68	58	65	55
9 to 12 inches	63	53	60	50
Double Extra Strong, Plain Ends.				
			Butt weld.	
½ inch	63	57	60	52
¾ to 1¼ inch	66	60	63	55
2 to 3 inches	68	62	65	57
Double Extra Strong, Plain Ends.				
			Lap weld.	
2 inches	64	58	61	52
2½ to 4 inches	66	60	63	57
4½ to 6 inches	65	59	62	56
7 to 8 inches	58	48	55	45

Plugged and reamed pipe is furnished at 2 points higher price, either butt or lap weld.

The above discounts are for full weight pipe, subject to a variation of 5 per cent, merchant pipe, when specified, being furnished up to 6 inches at one point higher discount (lower price).

Boiler Tubes. — Specifications are running very heavy on boiler tubes, both for steel and iron products, and the advance which affected pipe was carried easily by this branch of the pipe trade because it is so thoroughly sold up that new business is not easy to place. The tremendous increase in locomotive building, and the general increased activity in all industrial and power plant extensions are causing a very great increase in the demand for boiler tubing with a lower capacity owing to accidents and the going out of commission of one of the important makers. We revise the official discount on steel and charcoal iron boiler tubes as follows:

	Steel	Iron
1½ inch	59	47
1¾ to 2¼ inch	63	49
2½ inch	65½	54
2¾ to 3¼ inch	70½	56½
3½ to 4½ inch	73	59
5 and 6 inch	65½	..
7 to 13 inch	63	..

To destination east of Mississippi river will be sold at delivered discount for carloads lowered by 2 points, for lengths 22 feet and under; longer lengths, f. o. b. Pittsburgh. Usual extras to jobbers and boiler manufacturers.

Wire Products. — Heavy specifying on wire products is continuing, and leading makers of wire, with few exceptions, are holding to the new price base of $1.65 on nails and $1.45 on plain wire. There are, however, some points in the trade that show a weakness or rather an adherence to the old price of $1.60 for nails and $1.40 for wire. This condition is expected to be of short duration, owing to rapidly advancing prices on steel and raw material, and the readiness of buyers to take advantage of any concession. Jobbers are specifying very heavily on wire products, and reports show very low stocks in warehouses in the hands of jobbers for this season of the year. We quote the market as follows:

Wire nails, jobbers' carload lots, $1.60 to $1.65; retailers' carload lots, $1.65 to $1.70; cut nails (western makers), jobbers' lots, $1.60 to $1.65, painted barb wire, jobbers' carload lots, $1.65 to $1.70; retailers' carload lots, $1.65 to $1.70, with 30c for galvanizing; plain wire to jobbers in carloads, $1.40 to $1.45; and to dealers, in carloads, $1.45 to $1.50; polished staples, $1.60 to $1.65; galvanized staples, $1.90 to $1.95.

Wire Rods.—There is very much better demand for wire rods, and specifications against existing contracts are very heavy. Some sales at $27 are reported. We quote $26 to $27, Pittsburgh, for Bessemer and open-hearth wire rods.

Coke.—The market for spot coke for both furnace and foundry grades has been showing the effects of the dissension existing among the operators over the past week. After standing firm for nearly a month, the break-away of a faction of the Connellsville operators caused a rush effort to dispose of coke on track, and brought the price down to $2.20 for furnace coke and $2.35 for foundry coke. The limited supply, however, soon brought up the minimum price, and while the majority of consumers covered their requirements for the next ten days, current trade found $2.25 as the minimum, and, as the supply diminished, this has advanced to $2.30, and as high as $2.40. The Connellsville *Courier* for the week ending July 20 shows 30,239 ovens active, and a total production of 355,108 tons, as compared with 30,416 ovens active, and a total production of 375,557 tons for the prior week, showing a loss of about 20,000 tons over the week. Outside buying is still somewhat below the normal, considering the number of furnaces now operating. The foundry coke demand is keeping up more evenly. We quote standard Connellsville furnace coke $2.25 to $2.30, ovens, for spot shipment, and for contract coke over the last quarter $2.50, ovens. For standard Connellsville foundry coke we quote $2.35 to $2.50 for spot shipment, and on contract $2.60 to $2.75, ovens.

Old Material.—Increased activity in the steel works throughout the Pittsburgh territory has made the scrap market much firmer. The softer tendency of heavy melting steel has disappeared, $13.50 being the minimum on prompt and forward delivery, but no buying has been done beyond the third quarter. A good many dealers are short on their contract requirements, and are showing a disposition to close up quickly in anticipation of still higher prices. Machine shop turnings are scarce, and $10.75 to $11.25 is quoted. Bundled sheet scrap is strong at $12.25 to $12.50, and there appears to be very little of that stock to be offered. The announcement by the Pennsylvania railroad, that it will open bids on Aug. 7 for about 15,000 tons of miscellaneous scrap and about 18,000 tons of old rails, has aroused keen interest. Consumers as well as dealers are giving much attention to this sale. We quote gross tons, delivered in the Pittsburgh district, including Monessen, Steubenville, Brackenridge and Follansbee, as follows:

Heavy melting scrap	$13.50 to 13.60
Rerolling rails	14.25 to 14.50
Malleable	12.75 to 13.00
Bundled, sheet scrap	12.25 to 12.50
Iron axles	22.00 to 22.50
Old iron rails	15.50 to 16.00
Stove plate	9.00 to 9.50
No. 1 wrought scrap	13.75 to 14.00
Old car wheels	13.75 to 14.00
Low phosphorus	15.75 to 16.00
Machine shop turnings	10.75 to 11.25
Cast borings	10.00 to 10.25
No. 1 cast scrap	13.25 to 13.50

The Pittsburgh Steel Co. is reported to have secured extensive limestone deposits near Williamsburg, Md. It is planned to have a spur from the Western Maryland railroad built through property which the company secured for the purpose of supplying its future blast furnace requirements at Monessen, Pa.

CHICAGO

Finished Lines Stronger---Pig Iron Advances

Office of THE IRON TRADE REVIEW, 1328 Monadnock Blk., July 30.

Increasing strength in finished lines, coupled with advances in the price of pig iron are the interesting features of the week in the west. In finished material very little business is to be had except at a high premium. The greatest trouble is being experienced with structurals, as it is impossible to obtain deliveries under four months; and since producers are refusing to consider anything offered for 1913 delivery, fabricators find themselves unable to obtain figures on any new contracts. The volume of specifications remains unabated in all finished lines and in some instances is greater.

Pig Iron.—Some anxiety is being manifested by melters as regards third quarter requirements and more active buying is evident. Larger tonnages are being placed in all grades and the general market has been greatly strengthened by large sales of malleable. Large consumers in this territory are affected by the activity in car building and railroad buying and are finding that their future requirements will exceed expectations. Quotations on northern iron are rapidly hardening to a basis of $15.50, f. o. b. local furnace and while some small tonnages of spot iron may be placed at $15, larger requirements for last quarter are firm at the new figure. Some furnace interests in Chicage are hesitating to advance, but there is little doubt that the prices will be maintained. The volume in both sales and inquiries is stronger than at previous times this year and the furnaces are preparing to meet an additional heavy demand.

The following prices represent the market for the balance of the year, except northern foundry and malleable Bessemer, which are quoted f. o. b. local furnace:

Lake Superior Carcoal	$16.25 to 16.75
Northern foundry No. 2	15.00 to 15.50
Southern foundry No. 2	16.35
Southern Silv'ries, 5 per cent sil.	17.35
Jackson co. silv'r's 8 per cent.	18.35 to 18.85
Malleable Bessemer	15.00 to 15.50
Alabama basic	16.35

Billets.—There is no change in the condition of the market, the scarcity of billets in this district becoming more pronounced. It would appear that any betterment of the situation must come through a decrease in the demand for finished lines, and on this basis Chicago producers will not be factors in the billet market for some time. Prices remain firm. We quote, open-hearth forging billets, $31; re-rolling billets, $27.50.

Merchant Bars.—Specifications for bar iron for July promise to exceed June by a comfortable margin. Very little iron can be obtained at 1.35c, and the market is hardening to 1.40c. Deliveries continue to be the governing factor, and consumers are experiencing great difficulty in filling out on contracts. New business cannot be placed except in rare instances and at a high premium. Steel bars are very much stronger and while the price remains at 1.43c, such new business as can be taken is at a high advance over that quotation. Premiums are being offered freely and some tonnage has been taken at $7 over the present market. Jobbers are a week or more behind on shipments.

We quote, f. o. b. Chicago, as follows:

Bar iron, 1.35c to 1.40c, hard steel bars, rerolled, 1.30c to 1.35c; soft steel bars, bands and small shapes, 1.43c; hoops, 1.48c; smooth finished machinery steel, 1 inch and larger, 1.78c; shafting 65 per cent off list for carload lots, 60 per cent off for less than carloads.

On iron and steel from local stock we quote as follows:

Bar iron, 1.70c per pound base; soft steel bars, 1.70c to 1.75c per pound base; soft steel hoops, 2.00c, full extras.

Structural Material.—Deliveries on shapes are becoming more difficult, many contracts being delayed on account of the liability of the mills to quote prices for prompt shipment. New business cannot be taken at any price and western producers continue to refuse contracts for 1913. Contracts involving a total of 15,874 tons were placed during the week, 30 per cent of which was taken by the leading interest. This comprehends 230 tons from the Anaconda Copper Mining Co. for a tramway at Butte, Mont., 2,013 tons from the same buyer for a smelter at Great Falls, Mont., and 2,600 tons from the Chicago, Milwaukee & Puget Sound Railway Co. for the Judith river viaduct. The American Bridge Co. has also taken 412 tons from the state board of harbor commissioners of California for pier No. 28, San Francisco. The Milwaukee Bridge Co. has taken 1,715 tons from the Chicago, Milwaukee & Puget Sound Railway Co. for the Indian Creek viaduct in Montana. The Jackson-Richter Iron Works has taken 314 tons from the University of Utah for a building at Salt Lake City, and the Cleveland-Cliffs Iron Co. has let a contract for 137 tons for a shaft house and crusher building at the Imperial mine, Michigamme, Mich., to the Russel Wheel & Foundry Co. Other contracts let during the week include 112 tons by the Chicago, Burlington & Quincy Railroad Co., for bridge material, and 341 tons by the Sullivan Machinery Co. for a storehouse at Claremont, N. H.

We quote, mill prices, f. o. b. Chicago, as follows:

Beams and channels, 15 inch and under, 1.48c. For extras, see Pittsburgh report.

Store prices are as follows:

All angles, 3 inches and larger, including 6 inches, $1.80 to $1.85 per 100 pounds; angles over 6 inches, $1.90 per 100 pounds, base; beams, 3 to 15 inches, inclusive, $1.80 per 100 pounds, base; channels, 3 inches and larger, $1.80 per 100 pounds, base.

Rails and Track Fastenings.—An increasing number of rail orders from western roads are going east, representatives of eastern mills in this territory reporting more inquiries from western sources. Specifications are very heavy and enough business is being placed on the books to keep the mills in a congested condition. New business can be taken only in increasingly small tonnages, mills of the leading interest being full for the year. Large orders cannot be placed in this territory. Due to the increasing trouble in covering for requirements, there is some talk on the part of the railroads of a return to the old custom of buying ahead.

We quote light rails, f. o. b. Chicago, and track fastenings, f. o. b. Joliet, as follows:

Light rails, carloads, 25 to 45-pound, 1.20c to 1.25c; 16 to 20-pound, 1.25c to 1.30c; 12-pound, 1.30c to 1.35c; 8-pound, 1.35c to 1.40c.

Light section relayers, 45 pounds and un-

der, subject to inspection, $21 to $23; standard section relaying rails, subject to inspection, $23.50 to $24.

Track fastenings, f. o. b. Joliet, angle bars, 1.50c; railroad spikes, 1.70c, smaller size spikes, 1.70c base; track bolts with square nuts, 2.10c, base.

Plates.—The recent orders placed for cars have made additional heavy demands on the mills and specifications against contracts are greater even than in June. The total tonnage for the week is far greater than the capacity of the mills and producers in the Chicago district are full for some months. No 1913 business has been taken as yet and new business can be booked only at a high premium and only when it is possible to fill in. The Paris & Mt. Pleasant has ordered one locomotive from the Baldwin Locomotive Works, and the Texas, Oklahoma & Eastern has ordered one mikado locomotive from the same maker, who has also taken an order from the Pullman company for one mogul locomotive. The Butte, Anaconda & Pacific has ordered 17 electric locomotives from the American Locomotive Co., and the Illinois Central has ordered ten six-wheel switching locomotives from the same builders. The Minneapolis & St. Paul has ordered ten consolidation locomotives from the American Locomotive Co. The Escanaba & Lake Superior is in the market for 100 flat cars and the Canadian Pacific has ordered 1,000 box cars from the American Car & Foundry Co. and 1,000 additional from the Haskell & Barker Car Co.

We quote, f. o. b. Chicago, as follows:

Tank plates, ¼ inch thick. 63/8 to 100 inches wide, 1.48c. For extras, see Pittsburgh report.

Store prices are as follows:

Tank steel, ¼ inch and heavier, up to 72 inches wide, $1.80.

Sheets.—The sheet market shows greater strength, and specifications are at an increasingly high rate. Mills in the west are showing little inclination to take new business and are well filled for the year. As in other lines, no contracts for 1913 are being made. Store material is very strong and jobbers are having even greater difficulty in making deliveries even in a week's time. Further advances consistent with the demand and the congested mill conditions may be confidently expected.

We quote, f. o. b. Chicago, as follows, from stock:

Blue annealed, No. 10, 2.10c; No. 12, 2.15c. Box annealed, No. 28, 2.50c. Galvanized No. 28, 3.60c.

For mill prices, see Pittsburgh report. Freight to Chicago, 18 cents.

Wire Products.—Unexpected increases in the volume of business in wire has materially strengthened the market and an advance is expected in a short time. Independent producers are not actively seeking business in this territory and are reported to be well sold up for the year. Agricultural wire continues to lead in activity and wire rope is moving well. The demand is far in excess of expectations at this time of the year.

We quote, f. o. b. Chicago, as follows:

Wire nails, jobbers' carload lots, $1.83; retailers' carload lots, $1.93, retailers' less than carload lots, $1.98; painted barb wire, jobbers' carload lots, $1.78; retailers' carload lots, $1.88; retailers' less than carload lots, $1.98, with 30c for galvanizing; plain wire, jobbers' carload lots, $1.58; retailers' carload lots, $1.63.

Merchant Pipe and Tubes.—The heavy demand on pipe makers has brought about a further advance of one point on all grades and sizes, and there seems to be little or no retrogression in the market as a result. Makers are not able to catch up with the demand and continue to be behind on deliveries. The effect of the fall trade is beginning to be felt even at this early date.

We quote, store prices on merchant pipe and tubes, as follows:

Iron and Steel Pipe Basing Prices.

	Steel		Iron.	
	Black.	Galv.	Black.	Galv.
Butt.				
⅛ inch and ¼ inch.	69.2	48.2	62.2	41.2
⅜ inch	73.2	62.2	67.2	51.2
½ inch to 1½ inch.	76.2	67.2	70.2	58.2
Lap.				
2 inch	74.2	66.2	67.2	57.2
4½ inch to 6 inch..	75.2	66.2	58.2	59.2
Card Weight.				
7 inch to 12 inch...	72.2	61.2	66.2	55.2
Extra Strong Plain Ends.				
Butt.				
⅛, ¼, ⅜ inch.....	64.2	52.2	59.2	47.2
½ inch	69.2	57.2	64.2	52.2
2 inch to 3 inch....	74.2	62.2	....	....
Lap.				
2 inch	70.2	58.2	65.2	53.2
7 inch to 8 inch....	64.2	52.2	59.2	47.2
Double Extra Strong.				
Butt.				
½ inch	57.2	45.2	....	....
¾ inch to 1½ inch.	60.2	49.2	....	....
Lap.				
2 inch	58.2	46.2	....	....
4½ inch to 6 inch..	59.2	47.2	....	....
7 inch to 8 inch....	52.2	40.2	....	....

Tubes.

	Lap weld steel.	Charcoal iron.	Shelby seamless.
	Per cent.	Per cent.	Per cent.
1 inch	37	..	55½
1¼ to 2¼ inch.....	53	38	34
2¾ to 3½ inch.....	63	48	44
3½ to 4½ inch.....	65½	48	44
5 to 6 inch.....	53	..	..

Cast Iron Pipe.—While there is a very satisfactory number of inquiries in the market, the individual tonnage is small and no very large requirements have appeared. Considerable business is pending and some good tonnages are in prospect. Cincinnati closed bids for 2,200 tons of 6-inch pipe on July 29. With stronger pig iron quotations it is probable that cast iron pipe makers will be forced into another advance in the very near future.

We quote, f. o. b. Chicago, as follows:

Four-inch water pipe, $27.50, 6 to 12 inches, $26.00, larger sizes, $25.00; gas pipe, $1 a ton higher.

Old Material.—A stronger tendency in scrap is apparent, but has not materialized in any advance of quotations. Stocks continue to increase slightly and in some instances are unusually heavy. This fact, coupled with the continued scarcity of labor, retards buying and prevents any decided advance in the near future. There is a feeling among dealers that the strong position of finished lines must eventually have an effect on the market for old material and they are, therefore, not anxious for business at present prices. The Pennsylvania has invited bids on a list of good tonnage and the Illinois Central has issued a list totaling 9,000 tons, the principal items of which are 1,500 of No. 1 railroad wrought, 800 tons of No. 2, and 1,500 tons of re-rolling rails. A list issued by the Northwestern involves a total of about 6,000, the principal items being 500 tons of rails and 200 tons of No. 1 cast.

We quote for delivery in consumers' yards, Chicago, as follows:

Gross Tons

Old car wheels	$13.25 to 13.75
Old iron rails	16.50 to 17.00
Rerolling rails (5 ft. and over)	13.00 to 13.50
Old steel rails (3 ft. and under)	12.50 to 13.00
Frogs, switches and guards	11.75 to 12.25
Heavy melting steel	11.50 to 12.00
Shoveling steel	11.50 to 12.00

Net Tons

No. 1 R. R. wrought	$11.75 to 12.25
No. 2 R. R. wrought	10.75 to 11.25
Arch bars and transoms	15.25 to 15.75
Knuckles, couplers and springs	11.75 to 12.25
Shafting	14.50 to 15.00
Iron car axles	19.00 to 19.50
Steel car axles	15.50 to 16.00
Locomotive tires	13.50 to 14.00
Dealers forge	9.75 to 10.25
Pipe and flues	8.75 to 9.25
No. 1 cast	11.75 to 12.25
No. 1 busheling	9.75 to 10.25
No. 2 busheling	7.25 to 7.75
No. 1 boiler cut	8.25 to 8.75
Boiler punchings	12.50 to 13.50
Cast and mixed borings	6.25 to 6.50
Machine shop turnings	7.00 to 7.25
Railroad malleable	11.75 to 12.25
Agricultural malleable	10.50 to 11.00
Angle bars, splices, etc., iron	14.00 to 14.50
Angle bars, steel	11.25 to 11.75
Stove plate and light cast scrap	10.00 to 10.50

CLEVELAND

Pig Iron Firmer---Bar Iron Advances

Office of THE IRON TRADE REVIEW,
Penton Bldg., Aug. 6.

Iron Ore.—Some additional sales of ore have been made since our report last week, but the aggregate is not as large as has been reported in some quarters, and it is probable that 200,000 tons will cover the recent movement. Owing to the generally favorable outlook in the iron and steel business, and particularly the advanced prices of pig iron, it is expected that there will be additional inquiry from furnaces not fully covered for winter requirements. It is not probable, however, that the buying movement will be heavy, as there is not a large tonnage of ore for sale. Eastern consumers seem to be indifferent and those not fully covered are apparently of the opinion that they will be able to get all the ore they will need from some of the numerous sources from which eastern furnaces obtain ore.

On base ores with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range Bessemer, $3.75; Mesabi Bessemer, $3.50; old range non-Bessemer, $3.35; Mesabi non-Bessemer, $2.85.

Pig Iron.—The market has developed considerable more strength, both in the valley and the immediate Cleveland district. The sale of a considerable tonnage of pig iron within a few days by one Cleveland company has caused it to advance its quotations to a minimum of $14, furnace, for No. 2 foundry, for delivery in Cleveland or at a distance. This is an advance of from 50 to 75 cents over the recent quotations of this company for delivery outside of Cleveland. It amounts practically to withdrawal from the market for the remainder of this year. This company is also quoting basic and malleable at $14, furnace. Corrigan, McKinney & Co., who recently sold at $12.75, furnace, for No. 2 foundry for outside delivery, are understood to be firmer in their views, especially on foundry grades. The valley market is also firmer and $13.75 is now the usual quotation on No. 2 foundry, malleable and basic. A Cleveland agency declined to quote on a broker's inquiry for 10,000 tons of basic. No. 2 Hubbard furnace has blown in after being idle for 18 months. The Andrews & Hitchcock Iron Co., which owns the Hubbard furnaces, is in a very comfortable position for the remainder of the year and is firm in its market views. Some interest is being manifested in pig iron for the first quarter of next year and a small tonnage has been sold for that delivery at a substantial advance over recent quotations. We quote, delivered in Cleveland, for the remainder of the year, as follows:

No. 1 foundry	$14.25 to $14.75
No. 2 foundry	13.75 to 14.25
No. 2 southern	15.85 to 16.35
Bessemer	15.15 to 15.30
Lake Superior Charcoal	16.25 to 16.50
Jackson co. 8 per cent silvery	18.05

Coke.—Owing to the recent success of the furnaces in their struggle to break the coke market, they are hoping for still lower quotations, but there seems very little prospect of increasing the production and if this is not done, there will probably be slight change in quotations. Prices at the ovens are as follows:

Connellsville furnace coke, $2.25 to $2.40 for prompt delivery, and $2.25 to $2.50 on contract; Connellsville foundry coke, $2.50 to $2.75 for prompt, and $2.50 to $2.75 on contract.

Finished Material.—Specifications have been extremely heavy this month. It seems probable that the total for July will be one of the best in several years. The Cleveland office of the American Steel & Wire Co. last week made a new record on specifications and the showing of the Carnegie Steel Co. is highly gratifying. The Carnegie company will not promise deliveries of any kind of material before Oct. 1. The recent advance of a dollar in shapes, bars and plates was made so quietly that some of the local sales offices were not notified by their home offices. District sales agents are now being allowed very little discretion in taking orders, as nearly everything has to be submitted to headquarters. The great prosperity which is being enjoyed by nut and bolt manufacturers is an important factor in the increased demand for wire used for making nuts and bolts. The price of ¾-inch machine blanks and bolts, 1½ inch and larger, has been advanced 50 cents in cost. Local agencies are not showing much interest in the 3,750 tons of steel required for the new high level bridge. Some of them are figuring on the 2,000 tons required for the five new buildings for the Lima Locomotive Corporation, at Lima, O. No other important structural contracts are in sight, but many small jobs are being figured on by local shops. Bar iron has advanced $1 and 1.40c is now being quoted. Jobbers have advanced quotations on shapes and plates $1 and are now quoting 1.95c on shapes and plates and 1.75c on bars out of stock.

Old Material.—The scrap market showed great activity this week and dealers' quotations were quite generally advanced. A scarcity of heavy melting steel has developed, due to the increased demands of the past ten days. The Empire and Union rolling mills are again in the market for spot delivery and a local steel plant took a good-sized tonnage last week. An Alliance buyer is inquiring for a round tonnage. Quotations have advanced on heavy stock and dealers report sales at $13. The car tie-up at one of the local steel plants, which was relieved last week, has again developed due to the scarcity of labor. Dealers as well as buyers are unable to secure enough laborers. The market is firm and we revise quotations, f. o. b. Cleveland, as follows:

Gross Tons.

Old iron rails	$15.00 to 15.50
Old steel rails (under 6 ft.)	13.00 to 13.50
Old steel rails (over 6 ft.)	13.50 to 14.00
Relaying rails	19.50 to 20.00
Old car wheels	13.00 to13.50
Old steel boiler plate	11.25 to 11.50
Malleable iron (railroad)	12.50 to 13.00
Steel axles	18.00 to 18.50
Axle turnings	10.00 to 10.50
Malleable iron (agricultural)	10.00 to 10.50
Heavy steel	12.50 to 13.00
Country mixed steel	11.25 to 11.75
Bundled sheet scrap	10.00 to 10.50

Net Tons.

No. 1 R. R. wrought	$12.50 to 13.00
No. 1 busheling	11.00 to 11.50
No. 1 machine cast	11.50 to 12.00
No. 1 dealers' wrought	11.00 to 11.50
Machine shop turnings	7.75 to 8.00
Pipes and flues	9.50 to 10.00
Wrought drillings	7.75 to 8.00
Stove plate	9.50 to 10.00
Cast borings	7.00 to 7.25
Wrought iron piling plate	14.50 to15.00
Wrought iron arch bars	14.00 to 14.50

CINCINNATI

Pig Iron Prices Show More Strength

Office of THE IRON TRADE REVIEW,
503 Mercantile Library Bldg., July 30.

Pig Iron.—Prices on both southern and northern pig iron continue to grow stronger, and quotations on the former have been advanced 25 cents a ton during the past week. Most of the furnaces which up to the present time have been selling No. 2 foundry iron at $11.25, Birmingham basis, are now holding for $11.50 for spot shipment, but some sales are being made at this figure that extend through the whole last half of the year. The prevailing price for this grade for the last quarter is $12, Birmingham.

A summation of sales during the past week shows that more southern Ohio iron has been sold in this territory than southern grades, and as a result, some of the furnaces in the Hanging Rock district are out of the market and have advanced their price to $14, Ironton, for No. 2 foundry iron. The prevailing quotation in this district, though, is still $13.50, furnace, for prompt shipment. Recent inquiries here are as follows: One thousand tons of northern and 1,000 tons of southern iron, from central Indiana; 500 tons of northern No. 2 foundry iron from central Indiana, and 500 tons of northern No. 2 iron from central Ohio, all for delivery during the first half of next year; 100 tons of southern No. 1 for the fourth quarter, from southern Indiana; 150 tons of southern and 100 tons of northern iron, from central Ohio, and also 100 tons of northern No. 2 from the same territory. Recent sales include 1,000 tons of northern iron and 500 tons of northern and 500 tons of southern iron in separate lots to central Ohio melters, and 500 tons of southern No. 2 foundry iron to an Indiana user which was made at $11.50 for delivery through the year. With freight rates $3.25 from Birmingham, and $1.20 from Ironton, we quote Cincinnati prices as follows:

Southern foundry No. 2	$14.75 to 15.25
Southern foundry No. 3	14.25 to 14.50
Southern foundry No. 4	14.00 to 14.25
Southern gray forge	13.75 to 14.00
Mottled	13.00 to 13.75
Southern No. 1 soft	15.25 to 15.50
Southern No. 2 soft	14.75 to 15.25
Standard southern car wheel	25.50 to 25.75
Northern No. 2 foundry	14.70 to 15.20
Northern No. 3 foundry	14.20 to 14.45
Northern No. 4 foundry	13.95 to 14.20
Jackson co. 8 per cent silicon	17.20 to 17.45

Coke.—Despite reports from the east of a break in prices on spot coke in the Connellsville district, local dealers have received no notification of anything to that effect from the ovens they represent, and are still quoting the prices that have prevailed here for some time. Inquiries for furnace coke aggregate from 80,000 to 90,000 tons. Wise county coke is reported a little stiffer, and contract Pocahontas coke strong at from $2.25 to $2.50. Spot furnace coke from these fields is quoted at from $2 to $2.25, ovens. Connellsville furnace coke is being offered at from $2.25 to $2.35 for prompt shipment, and from $2.35 to $2.50 for later shipment. Foundry coke is quoted at from $2.50 to $2.75 for both deliveries. We quote from the leading coke producing districts as follows:

Connellsville district.	Prompt shipment	Contract second half.
Foundry coke	$2.50 to 2.75	$2.50 to 2.75
Furnace coke	2.25 to 2.35	2.35 to 2.50
Wise country district:		
Foundry coke	$2.50 to 2.75	$2.50 to 2.75
Furnace coke	2.25 to 2.50	*Sliding scale basis.
Pocahontas district:		
Foundry coke	$2.25 to 2.50	$2.50 to 2.75
Furnace coke	2.00 to 2.25	2.25 to 2.50
New river:		
Foundry coke	$2.50 to 3.00	$3.00 to 3.25
Furnace coke	2.15 to 2.25	2.35 to 2.50

*Sliding scale basis means $1.60 for coke based on $9, Birmingham, for pig iron, with an advance of 16 2-3 per cent of the amount over $9 which pig iron is quoted. This is the usual basis. Other forms of sliding contracts are also made.

Finished Material.—Steel bars have been advanced to 1.30c, and structurals are being held at 1.35c, both Pittsburgh basis. The local offices of several of the larger eastern manufacturers state that they have been holding for these prices since some time last week, as they are practically out of the market on all building material. The local sheet market is strong, and prices are firm as follows, all Pittsburgh basis: Galvanized sheets, No. 28 gage, 3.15c, and black sheets, No. 28 gage, 2.05c. Specifications are being received by the local mill in good lots, but it is already well supplied with orders. The city of Cincinnati has ordered 3,000 tons of cast iron pipe from the Glamorgan Pipe Co., of Lynchburg, Va., the purchase price being $89,000. The Roche-Bruner Building Co., Cincinnati, has been given the contract for the building of the new St. Elizabeth's hospital, at Covington, Ky., which will cost approximately $500,000. About 760 tons of structural steel and 100 tons of reinforcing bars will be used. For mill prices, see Pittsburgh report.

Warehouse business is good, and prices will undoubtedly be advanced within a few days. Structurals are now being held at 1.95c, f. o. b. Cincinnati, this advance having been made the latter part of last week. Stocks in warehouses are beginning to become light, due to the recent heavy drain upon them, and buyers are beginning to find it a harder proposition to secure the amounts wanted. Demand is mostly for those materials used in building. We quote warehouses, f. o. b. Cincinnati, as follows:

Steel bars, 1.75c base; iron bars, 1.70c base; structurals, 1.95c base; plates, ¼ inch and over, 1.85c base; sheets, blue annealed No. 10, 1.95c base; rivets, cone head, 2.30c base; cold rolled shafting, 60 per cent discount; boiler tubes as follows: 1¾ to 2¼ inch, 60 per cent discount; 2½ inch, 62 per cent discount; 2¾ to 3¼ inch, 65 per cent discount; 3½ to 4½ inch, 67 per cent discount; and 5 to 6 inch, 60 per cent discount; cold rolled shafting, 60 per cent discount; soft steel cold twisted concrete bars, cut to length as follows: ¾ inch square and larger, 1.85c, ⅝ inch square and larger, 1.95c; ½ inch square and larger, 2.05c; 5-16 to ¾ inch square and larger, 2.25c; ¼ inch square and larger, 2.35c.

Old Material.—The scrap iron market is at a standstill, and both the buyers and sellers are waiting for developments before beginning active operations. Prices fluctuate a little, but do not vary enough to warrant a change in the quotations. We quote below prices dealers will pay and also selling prices in Cincinnati and vicinity, as follows:

Gross Tons

Old iron rails	$12.25 to 13.00
Old steel rerolling	10.75 to 11.25
Old iron axles	17.25 to 17.75
Heavy melting scrap	9.75 to 10.25
Relaying rails	19.75 to 20.75
Bundled sheet scrap	7.50 to 8.00

Net Tons.

Old No. 1 R. R. wrought	$10.00 to 10.50
No. 1 machinery cast	10.00 to 10.50
No. 1 busheling	7.75 to 8.50
Stove plate	7.50 to 8.00
Machine shop turnings	6.25 to 6.75
Cast borings	6.00 to 6.50
Heavy turnings	6.75 to 7.25
Mixed cast	8.50 to 9.00
Malleable	7.00 to 7.50

PHILADELPHIA

Plates, Shapes and Bars Advanced

Office of THE IRON TRADE REVIEW,
Philadelphia, July 30.

Price advances of another $1 a ton in plates, shapes and steel bars, which had been expected for several days, made their appearance this week when a number of the leading independent makers withdrew their former schedules. Eastern mills either participated in this movement or quickly followed the lead taken. Previous to the advances they had continued to book orders in plates and shapes at premium prices. New business, while not anything unusual, is holding up very well in the east. The ship yards, which continue to estimate new work actively, have been placing some heavy orders for plain material. Melting materials are not in brisk demand, but show price firmness. Basic pig iron sold in the east in the week at $15.70, delivered, a further advance of 20 cents over the last previous sale and a new high price in eastern Pennsylvania in about two years. Further sales of heavy melting steel scrap at $14, delivered, have been made.

Pig Iron.—Buying of iron in liberal quantities for prompt and last quarter delivery is still moderate, but there continues current a fair tonnage of smaller orders. The price situation shows no signs of softness in eastern Pennsylvania and adjoining districts, but there is still some range in price quoting, as some makers have been slower than others in advancing their schedules. The minimum of the Philadelphia No. 2X market continues to harden at $15.75, delivered, and any selling below this level is confined to one or two furnaces. Some sales of No. 2 plain are reported at only slightly below the $15.75 level. Several furnaces are holding and are making sales at $16, delivered, for No. 2X, or $15.25, furnace. The strength of foundry iron prices is reflected in the market for pipe iron and lower silicon grades. The range for the former grade, delivered along the Delaware river, is $15 to $15.25 at buyers' plants. One pipe maker in the week closed for 2,500 of gray forge and No. 2 plain for last quarter with an eastern Pennsylvania maker at $15.25, delivered. Another took 500 tons of forge iron from the south at about $15.15, delivered. The pipe companies continue to sound the market for round blocks and one of them is informally figuring on a lot of 10,000 tons. Mill forge is inactive. Virginia iron is firm at $13.25 to $13.50 for prompt and last quarter. Some of the Virginia furnaces have been a little short of No. 2X grades and their deliveries have been slow. Steel making irons show more movement. A Schuylkill valley steel maker has taken 3,000 tons of basic for last quarter at $15.70, delivered, equivalent to $15.25, furnace, and now reports itself covered for the year. A central Pennsylvania consumer is figuring on its last quarter needs, which will reach from 10,000 to 12,000 tons. Eastern basic makers are generally holding this grade at $15.25, furnace, which at some consuming points is equivalent to $16, delivered. The sale made this week at $15.70, delivered, is 20 cents over the last previous sale recently made to this consumer and is a new high price paid for basic in the east in about two years. A leading maker of standard low phosphorus iron has advanced prices to $18, New York state furnace, or $20.50, Philadelphia, and has made some small sales at this level. A buyer of low phosphorus in the Pittsburgh district has closed with a nearby maker for 500 to 1,000 tons for last quarter.

We quote for prompt and last quarter shipment at consumers' plants in Philadelphia and vicinity as follows:

Eastern Pa. No. 2X foundry	$15.60 to 16.00
Eastern Pa. No. 2 plain	15.35 to 15.50
Standard gray forge	15.00 to 15.50
Basic (Eastern and Central Pa.)	15.70 to 16.00
Virginia No. 2X	16.05 to 16.30
Southern No. 2	15.50 to 15.75
Standard low phosphorus	20.50
Malleable	15.85 to 16.10

Coke.—Eastern consumers have not, in any considerable degree, taken advantage of the lower Connellsville coke prices for prompt and contract resulting from the break in the recent deadlock from the sellers' side. This is due to their having bought liberally for last half of coke from other districts, principally West Virginia. Offers of 8,000 to 10,000 tons monthly of Connellsville coke for last half at $2.30, ovens, have not proven attractive to eastern furnacemen. Shortages of labor and recent floods in certain districts are seriously cutting down normal outputs of the ovens and one of the leading makers of foundry coke is notifying its customers that it will be able to ship only 80 per cent of tonnages specified in contracts.

Finished Material.—A further advance of $1 a ton in plates, shapes and bars to 1.35c, Pittsburgh, for plates and shapes and to 1.30c, Pittsburgh, on steel bars, furnished the principal market development of the week. This advance was precipitated by the withdrawal at the close of last week of several of the leading independent companies from the former schedules quoted, including the Jones & Laughlin Steel Co., the Lackawanna Steel Co., and some of the smaller eastern mills and the asking of $1 a ton additional in these lines. The action of these companies was followed Monday by the Republic Iron & Steel Co. and other large makers, and the higher schedule is now generally in effect. The new prices represent 1.50c, Philadelphia, on plates and shapes, and 1.45c on steel bars.

Preceding the advance, eastern shape mills had been booking a number of small orders at 1.35c, Pittsburgh, and were quoting 1.50c, mill, on stock material. Eastern plate mills have continued to book freely of new business and to obtain some orders for early shipment at premiums up to $4 a ton, principally in universal plates, though some extra prices were also paid for prompt sheared plates. Premium payments to eastern plate makers for favorable deliveries are likely to become less numerous, as these mills are falling more and more behind, and one of them is now promising universals in from seven to eight weeks and sheared in about five weeks.

New business is still quite fair. The plate mills report no diminution of orders. Shapes are moving freely on contracts, but prolonged deliveries are holding back the placing of some fresh orders. Sheet buyers have been closing liberally with eastern makers following the recent advance. There continues a lively demand for

billets at full prices with some shipments from the east going beyond Pittsburgh. Bar iron makers are asking 1.35c, Philadelphia, more generally, but about 1.32½c or 1.25c, mill, can still be done. Mill operations in the east generally continue as full as the labor supply will permit, this proving the main deterrent factor.

In structural awards, Barber & Ross have 800 tons for the Fulton apartment, Atlanta, Ga.; the Richmond Structural Steel Co. 500 tons for the Chamber of Commerce, Richmond; the McClintic-Marshall Construction Co. about 400 tons for trestles and hoppers for the Baltimore Smelting & Refining Co., Baltimore, and W. S. Barnes & Co. have received a sub-contract for the steel, about 500 tons, from the contractor for the Y. M. C. A. on the west side, this city. F. T. Nesbit & Co. have the general contract for Reuger's hotel, Richmond. Bids are being taken on the Apollo theater, this city, 400 to 500 tons. Plans will soon be out for a bank building, Scranton, about 750 tons. The addition to the Jones building, Chattanooga, about 2,000 tons, has been indefinitely postponed. Plans will be out soon for the Evans museum of the University of Pennsylvania.

Eastern plate mills will furnish about 1,000 tons for 100 boilers placed by the Rumley Co., Laporte, Ind. The state of Pennsylvania is taking bids this week for two large water tanks at Cresson and Mont Alta, Pa., requiring about 1,000 tons of steel. There has been no disposition of the inquiries for 5,000 tons of steel skelp and for a large tonnage of plates for export to Scotland.

We quote, delivered at consumers' plants in Philadelphia and vicinity, as follows:

Plain structural shapes, 1.50c; tank plates, 1.50c; steel bars, 1.45c; common bar iron, 1.32½c to 1.35c; cut nails, 1.65c to 1.70c; blue annealed sheets, No. 10 gage 1.60c; 4 x 4-inch open-hearth rolling billets, $24.40; forging billets, $29.40 to $30.40. Extras shown under Pittsburgh report. Philadelphia warehouse prices 1.75c for plates, shapes and bars.

Ship Building Work.—An eastern ship yard which has taken considerable work recently has placed orders with eastern and Pittsburgh mills for a heavy tonnage of shapes and plates, estimated at 25,000 tons or more to cover these requirements. A large 500-foot freighter of 9,500 tonnage for the Matson Navigation Co., and a 350-foot oil carrier of 5,200 tonnage for the East Coast Oil Co., both placed with the Newport News Ship Building & Dry Dock Co., will require 4,000 to 5,000 tons and 2,000 to 3,000 tons respectively. This material will be drawn from eastern and Pittsburgh districts. The United Fruit Co., which has been in the market for three large steamers for South American service, has placed this order with Workman, Clark & Co., Ltd., Belfast, Ireland. Each of these boats will require about 6,000 tons. Considerable new figuring on vessel construction is being done by eastern builders.

Old Material.—An eastern steel company has closed for an additional block of 5,000 tons of heavy melting steel at $14, delivered, making a total of 15,000 tons taken by this buyer at this figure in addition to some tonnage at a lower price. The steel makers, generally, are reluctant as yet to pay this price and are confining their attentions to picking up odd small lots, which they are able to do at $13.75, delivered. Dealers and holders of material, however, scent a buying movement in scrap in the near future and are waiting for better prices. In no grade does the market show any sizable movement. Prices are about stationary. We quote, gross tons, delivered at consumers' plants in eastern Pennsylvania and western New Jersey, as follows:

Old iron rails	$16.50 to 17.00
Old steel rails (rerolling)	14.75 to 15.25
No. 1 heavy melting steel	13.50 to 14.00
Old car wheels	13.75 to 14.25
Old iron axles	24.00 to 25.00
Old steel axles	17.50 to 18.00
No. 1 railroad wrought	15.00 to 15.50
Wrought pipe	12.50 to 13.00
Cast borings	9.75 to 10.25
Machine shop turnings	10.75 to 11.25
Heavy cast	13.50 to 14.00
Malleable	11.75 to 12.25
Stove plate	10.75 to 11.25
No. 1 forge	12.00 to 12.50

Freight rates per ton on scrap from Philadelphia to principal eastern consuming points are: $0.60 to Ivy Rock, Pa.; $0.65 to Phoenixville, Pa.; $0.80 to Coatesville, Pa.; $0.85 to Bethlehem, Pa., Reading, Pa., and Roebling, N. J.; $1.10 to Pottsville, Pa., Lebanon, Pa., and Columbia, Pa.; $1.20 to Harrisburg and Steelton, Pa.; $1.40 to Milton, Pa.

ST. LOUIS

Round Tonnage of Basic Sold

Office of THE IRON TRADE REVIEW,
St. Louis, July 30.

Pig Iron.—The largest recent sale in the St. Louis territory, 20,000 tons of basic, was made the latter part of last week. The market for pig iron is good, with inquiries out for 2,000 to 3,000 tons of malleable for delivery to an Illinois plant, and scattering inquiries for a total of about 4,000 tons of southern iron. Southern No. 2 seems to be firm at $12, Birmingham basis, with northern iron ranging from $13.50 to $14, f. o. b., Ironton. A sale of 500 tons of southern No. 2 was made today.

Our tabulated prices on southern iron, Birmingham basis, follow:

Southern No. 1	$15.50 to 16.00
Southern No. 2	15.00 to 15.60
Southern No. 3	14.50 to 15.00
Southern No. 4	14.00 to 14.50

Coke.—Inquiries are in the market for 50 cars of crushed coke and about 200 cars of foundry coke. With this exception, the market is rather dull, although a sale of 20,000 tons of smelter coke gave the impression that a buying movement was about to start.

Our prices on coke remain unchanged as follows:

We quote 72-hour Connellsville foundry grades, $2.60 to $2.75 for immediate shipment or delivery through the year; 48-hour Connellsville furnace, $2.25 to $2.40; best 72-hour Virginia foundry, $2.50 to $2.75; 48-hour Virginia furnace, $2.25 to $2.40. The freight to East St. Louis and St. Louis is $2.80, and $2.70 from the Virginia fields when shipment is destined beyond St. Louis.

Finished Material.—Steel plates and bars are in good demand against specifications. Contracts for structural steel for a proposed hotel and at least one office building may be let before the close of the week.

Old Material.—Transactions in scrap iron have shown very little improvement. Prices which dealers are willing to pay f. o. b. St. Louis, follow:

Gross Tons.

Old car wheels	$13.50 to 14.25
Old iron rails	15.25 to 15.50
Re-rolling rails (5 ft. and over)	13.25 to 13.75
Old steel rails (3 ft. and under)	12.25 to 13.25
Light section relayers (45 lb. and under) subject to inspec.	21.50 to 22.50
Relaying rails, subject to inspec.	22.50 to 23.25
Frogs, switches and guards	9.50 to 10.25
Heavy melting steel	10.50 to 11.25
Shoveling steel	9.75 to 10.25

Net Tons.

No. 1 railroad wrought	$10.50 to 11.00
No. 2 railroad wrought	9.50 to 10.00
Arch bars and transoms	13.25 to 13.50
Knuckles, couplers and springs	9.50 to 10.00
Shafting	13.00 to 13.50
Iron car axles	17.50 to 18.00
Steel car axles	15.00 to 15.50
Locomotive tires	10.50 to 11.00
No. 1 country wrought	8.75 to 9.25
Pipe and flues	8.00 to 8.50
Tank iron and cut boilers	7.00 to 7.50
No. 1 cut busheling	8.75 to 9.25
No. 2 cut busheling	5.75 to 6.25
Cast and mixed borings	5.75 to 6.00
Machine shop turnings	6.50 to 6.75
Railroad malleable	10.00 to 10.50
Agricultural, malleable	9.00 to 9.50
Stove plates	9.00 to 9.50
Angle splice bars (iron)	10.75 to 11.50
Angle splice bars (steel)	9.00 to 9.50

NEW YORK

Quiet Buying of Round Tonnage of Pig Iron

Office of THE IRON TRADE REVIEW,
1115 West Street Bldg., July 30.

Iron Ore.—The Sagmanera, Spanish ore, which has been purchased freely by eastern furnaces, has been advanced in price from 7¼ to 8 cents per unit, f. o. b. cars Philadelphia. This advance reflects higher prices being asked for trans-Atlantic ores caused by the heavier demand from continental Europe and Great Britain. There is not much interest in the ore market at present among the eastern furnacemen.

Pig Iron. — What otherwise has seemed to be a very quiet market from the standpoint of open inquiry, has been broken by the negotiations here and there of large buyers and the closing of some round tonnages. One large purchaser, which was figuring on a block of special analysis iron for delivery after the first of the year, has closed for 15,000 to 20,000 tons and this business is understood to have gone to New York state furnaces. Several propositions exceeding in size the small run of orders that have characterized the market have come out in the past several days. The New York Central Railroad is inquiring for 2,000 tons of No. 1 and No. 2X for shipment over this year at Frankfort, N. Y. Another eastern consumer is asking prices on 6,000 tons of basic for first quarter delivery. While there has been some moderate selling in New England at about 25 cents below the established market there, which is about $16.50, delivered for No. 2X, prices on the whole in metropolitan and northeastern districts, are uniformly firm. Some advances are still appearing. A leading Lehigh Valley maker with several furnaces this week advanced its schedule 25 cents to $15.50 furnace, for No. 2X, or $16.20, Jersey City. Several eastern Pennsylvania makers are now quoting at this level. The Buffalo market shows firmness at $14.00 to $14.25, furnace, for No. 2X. Virginia iron is also well established at $13.25 to $13.50, furnace, for No. 2X. We quote, for prompt and fourth quarter shipment, delivered at New York tidewater, as follows:

Northern foundry No. 1	$16.00 to 16.25
No. 2X foundry	15.60 to 16.00
No. 2 plain	15.25 to 15.50
No. 2 Virginia	16.05 to 16.30
No. 2 southern foundry	15.75 to 16.00
Malleable	15.75 to 16.00
Gray forge	15.00 to 15.25

Ferro-Alloys.—Since the advance in ferro-manganese to $51.00, seaboard, there has been practically no business transacted in this alloy. Several consumers who were in the market at the time of the advance, are still inquiring but are holding off a while from paying the new figure. The pending inquiry amounts to about 1,000 tons. Prices in 50 per cent ferro silicon are very firm. We quote standard English 80 per cent ferro-manganese for prompt and forward shipment at $51.00, seaboard, and 50 per cent ferro-silicon at from $70 to $73, Pittsburgh.

Cast Iron Pipe.—There is a conspicuous absence of public lettings in the east and a similar condition is reported from other sections. Private buying, however, is holding up strongly, especially in the smaller sizes, in which prices are firmer, but the fact that larger size pipe is moving less freely makes the tonnage lighter. We quote 6-inch pipe at from $22 to $23, f. o. b. New York in carload lots.

Finished Material.—A general advance of $1 a ton in steel bars to 1.30c, Pittsburgh, and in plates and shapes to 1.35c, Pittsburgh, is going into effect this week. The lead in this action has been taken by some of the largest independent companies, including the Jones & Laughlin Steel Co., Republic Iron & Steel Co., Lackawanna Steel Co. and others. Other steel companies are gradually following suit. While the Steel Corporation has not yet issued an official statement adopting the advance, it is expected to do so without delay. One eastern steel company is quoting $1 above the advanced price on steel bars, or 1.35c, Pittsburgh. Eastern bar iron makers are making efforts to get their market up to 1.35c, New York, but they find themselves still obliged at times to accept 1.30c, New York. Specifications have been coming in upon some of the larger makers in such liberal quantities that they have adopted the plan of scaling down the contracts of customers and of distributing tonnage pro rata. New business is not so heavy, but the general situation shows much strength.

Indications point to the appearance in the near future of plans and requests for bids for extensions and third tracking of the elevated lines of the Interborough Rapid Transit Co., which will require, it is estimated, about 90,000 tons of steel. This project was originally before the market a year or more ago, but no action was taken at that time because all the franchise arrangements had not been completed.

The Geo. A. Fuller Co. has received the contract to wreck the ruins of the old Equitable building, on Broadway, which was destroyed by fire several months ago, and it is reported that fresh energy is being given to the organization of a company to erect a large structure upon the site. The Equitable company several years ago had plans prepared for the building up of the site with the tallest business structure in New York, but this project was subsequently abandoned.

Structural work coming out in metropolitan and tributary eastern districts is lighter and not a great amount of tonnage is now pending. Lewisohn & Co. have the steel contract for the Roth loft, at Lexington avenue and East Twenty-fifth street, about 500 tons, and the Lehigh Valley Structural Steel Co. will do the fabrication and erection. An Italian school at Hester and Livingston street, 600 tons, has gone to Levering & Gerrigues. The Eatondale Construction Co. has the general contract for the Levy apartment uptown and figures have gone in on the steel, 1,000 tons. Bids have been asked for a loft for the St. John Realty Co., Forty-seventh street, about 600 tons, and will go in Aug. 5 for an office building for W. R. Grace & Co., at Old Slip, Water and Pearl streets, about 700 tons. Bids have been asked for two 10-story apartments for the Dungan Construction Co., at Wadsworth avenue and 172nd street, to require 1,000 to 1,500 tons. Plans are in preparation for an apartment for Summer Girard and the Hasco Building Co., 562-68 West

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Old car wheels	13.75 to 14.25
Old iron axles	24.00 to 25.00
Old steel axles	17.50 to 18.00
No. 1 railroad wrought	15.00 to 15.50
Wrought pipe	12.50 to 13.00
Cast borings	9.75 to 10.25
Machine shop turnings	10.75 to 11.25
Heavy cast	13.50 to 14.00
Malleable	11.75 to 12.25
Stove plate	10.75 to 11.25
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Our tabulated prices on southern iron, Birmingham basis, follow:

Southern No. 1	$15.50 to 16.00
Southern No. 2	15.00 to 15.60
Southern No. 3	14.50 to 15.00
Southern No. 4	14.00 to 14.50

Coke.—Inquiries are in the market for 50 cars of crushed coke and about 200 cars of foundry coke. With this exception, the market is rather dull, although a sale of 20,000 tons of smelter coke gave the impression that a buying movement was about to start.

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Relaying rails, subject to inspec.	22.50 to 23.25
Frogs, switches and guards	9.50 to 10.25
Heavy melting steel	10.50 to 11.25
Shoveling steel	9.75 to 10.25

Net Tons.

No. 1 railroad wrought	$10.50 to 11.00
No. 2 railroad wrought	9.50 to 10.00
Arch bars and transoms	13.25 to 13.50
Knuckles, couplers and springs	9.50 to 10.00
Shafting	13.00 to 13.50
Iron car axles	17.50 to 18.00
Steel car axles	15.00 to 15.50
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Cast and mixed borings	5.75 to 6.00
Machine shop turnings	6.50 to 6.75
Railroad malleable	10.00 to 10.50
Agricultural, malleable	9.00 to 9.50
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No. 2X foundry	15.60 to 16.00
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No. 2 Virginia	16.05 to 16.30
No. 2 southern foundry	15.75 to 16.00
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End avenue, 700 tons; for an apartment for Brown Brothers & Co., Inc., at 105 to 109 West Seventy-second street, about 600 tons, and for an apartment for the Munden Construction Co., 148-154 West Ninety-fifth street, about 300 tons. The Baltimore & Ohio warehouse at Twenty-sixth street and Eleventh avenue, has been awarded to the Turner Construction Co., and will be of concrete construction. Bids were taken this week by the city on 750 tons for reinforcement of the Williamsburg bridge. A contract for a new smelter for the United Verde Copper Co., Jerome, Ariz., to require 8,100 tons, has been awarded to the Kansas City Structural Steel Co., through New York offices. Railroad work is moderate. The Central Railroad of New Jersey has finally awarded 3,800 tons for its Jersey City terminal improvements to the American Bridge Co. and the Pennsylvania Steel Co. The New York Central railroad bridge at Oswego, 1,500 tons, is expected to go to the Phoenix Bridge Works. The Boston & Maine has placed a bridge at Lynn, Mass., 400 tons, with the Phoenix Bridge Works, and the Chesapeake & Ohio has awarded 22 small spans to the American Bridge Co. The Lehigh Valley has placed a small order for bridge work with an independent shop.

Equipment awards have been less numerous the past week, but conditions are promising. The Pennsylvania lines west are out with a new inquiry for 1,000 box cars and the Pittsburgh & Lake Erie is inquiring for 1,000 cars. The Southern railroad, which has been taking bids on 700 cars, has decided to build these in its own shops. The American Car & Foundry Co. has been placing some large tonnages of plain materials with eastern and middle western mills for car orders recently taken. We quote, delivered at New York tidewater, as follows:

Plain structural shapes, 1.51c; tank plates, 1.51c; steel bars, 1.46c; common iron bars, 1.30c to 1.35c; steel bars from store, New York delivery, 1.85c; plates and shapes from store, 1.95c; extras as shown under Pittsburgh report.

Rails and Track Material.—The Brooklyn Rapid Transit Co. has entered the market for 15,000 tons of standard rails for new extensions of the subway system. This is an unusually large inquiry to be put out by a rapid transit system of the metropolis. The Southern New England railroad is still in the market for 10,000 tons of rails.

Old Material.—Consumers of scrap in the east have been suffering from the scarcity of common labor and have been unable to unload shipments promptly with the result that heavy demurrage charges have been incurred. This condition is holding back the movement of scrap in some directions. The market has not been as active the past week as during the preceding one, which is due to the fact that the eastern Pennsylvania steel works which were in the market for heavy melting material have now covered. One of these works is understood to have bought a total of about 15,000 tons of heavy steel at $14, delivered. Steel scrap remains the strongest on the list. Cast is dull and wrought material is moving slowly. Sales of yard wrought at $14, delivered, in eastern territory are noted. We quote, gross tons, prices New York dealers will pay at tidewater, as follows:

Old car wheels	$11.75 to 12.00
Old iron axles	20.00 to 21.00
Steel axles	15.25 to 15.75
Old steel shafting	13.75 to 14.00
No. 1 heavy melting steel	11.50 to 11.75
No. 1 R. R. wrought	13.25 to 13.50
Wrought pipe	10.00 to 10.25
Cast borings	7.25 to 7.50
Machine shop turnings	8.25 to 8.50
Heavy cast	11.00 to 11.25
R. R. malleable	10.00 to 10.50
Stove plate	8.25 to 8.50
Grate bars	7.25 to 7.50

Freight rates on scrap per ton to Steelton, Pa., Columbia, Pa., Pottsville, Pa., and Harrisburg, Pa., are $1.50 from Jersey City and $2.00 from New York; to Coatesville, Pa., Ivy Rock, Pa., Phoenixville, Pa., and Reading, Pa., $1.50 from Jersey City and $1.80 from New York; to Bethlehem, Pa., $1.10 from Jersey City and $1.60 from New York; to Roebling, N. J., $1.00 from Jersey City and $1.50 from New York; to Milton, Pa., $1.60 from Jersey City, and $2.00 from New York; to Jersey City, $1.00 from New York; to Newark $1.10 from New York.

BIRMINGHAM

Pig Iron Trading Very Light

Office of THE IRON TRADE REVIEW,
Birmingham, Ala., July 29.

Pig Iron. — The transactions recorded in this market within the past week are of little consequence, comparatively, and do not indicate any change in the situation. For the small lots sold, a basis of $12 at Birmingham for No. 2 foundry, was maintained, but the trading in all quarters of the territory was very light and the aggregate tonnage involved was smaller than that involved in several weeks past. The largest sales reported were carloads and lots of 50 to 100 tons, usually for spot shipment. One of the large producers recently refused to quote on a round tonnage of Nos. 2 and 3 foundry, owing to the present condition of order books for such grades, and offers a limited tonnage only of No. 4 foundry, gray forge, and analysis iron. Another large producer is not expected to enter the market for additional tonnage of any grade within the next 30 days, while still another concern is solicitous of such orders as will take care of the output during the remainder of this month. Asking prices for forge and mottled are still higher than the usual differential on a No. 2 foundry basis, and silvery has just been quoted at $14 per ton, Birmingham. An inquiry for 800 tons of analysis iron is pending. With the market very quiet, the schedule of prices below is quoted, per gross ton, f. o. b. cars at Birmingham district furnaces, viz.:

For delivery during the remainder of the year:

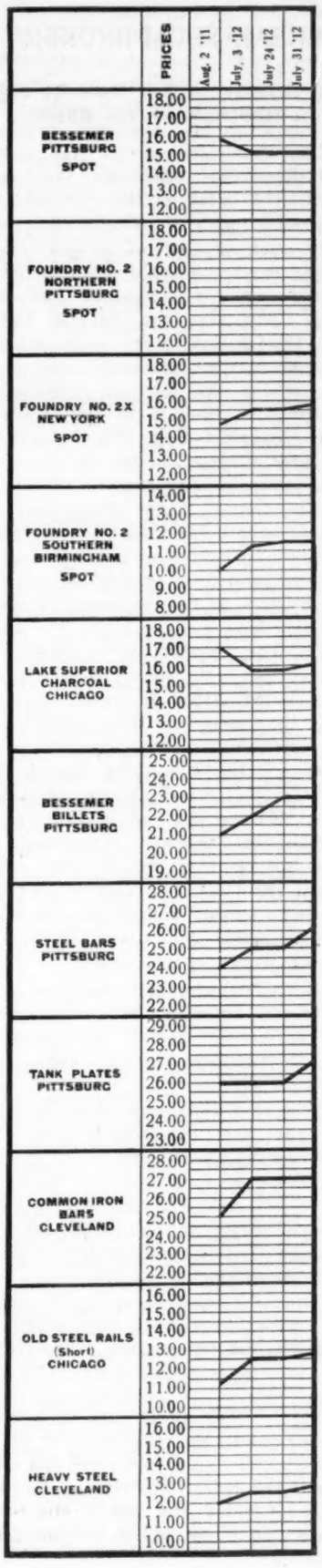
No. 1 foundry	$12.50
No. 2 foundry	11.50 to 12.00
No. 3 foundry	11.00 to 11.50
No. 4 foundry	10.50 to 11.00
Gray forge	10.25 to 10.75
Mottled	10.00 to 10.25
Standard basic	10.75 to 11.25
Off basic	10.50 to 10.75
Standard charcoal	22.50 to 23.00

With the exception of charcoal iron, an advance of 25c to 50c per ton would be asked over the above figures for deliveries in the last quarter.

Cast Iron Pipe.—The most important of recent bookings in this market are, 200 tons of water pipe for the city of Mexico, 500 tons of the same grade for Davenport, Ia., and 350 tons of the same for Long Beach, Cal. Prices received for this tonnage just mentioned are not made public, but quotations are understood to have been maintained. Confirmation cannot be had locally of a recent report that a plant would be established in Virginia by the American Cast Iron Pipe Co., although such a plant is under consideration. At this time, all local equipment is in full operation with sufficient orders for several months steady output, but the plant at Sheffield, Ala., remains idle. Quotations on water pipe are unchanged, and are as follows, per net ton, f. o. b. cars here, viz.: 4-inch, $23.50; 6-inch and up, $21.50, with $1 per ton extra for gas pipe. Special fittings are quotable at from $45 to $50 per net ton at foundry.

Old Material. — Forwardings from local yards were light comparatively, during the past week, and accumulations increased accordingly. There has been no improvement in the prices offered for steel grades, but wrought and cast grades are very firm. Negotiations for some 2,500 tons of this last mentioned are now under way, which is intended to

PRICE CHART



clean up the accumulation at a local furnace plant. The prices dealers are asking for their holdings are about as follows, per gross ton, f. o. b. cars here, viz.:

Old iron axles (light)	$15.50 to 16.00
Old steel axles (light)	12.00 to 12.50
Old iron rails	12.00 to 12.50
No. 1 R. R. wrought	12.00 to 12.50
No. 2 R. R. wrought	10.50 to 11.00
No. 1 country	8.50 to 9.00
No. 2 country	6.50 to 7.00
No. 1 machinery	9.00 to 9.50
No. 1 steel	9.50 to 10.00
Tram car wheels	8.50 to 9.00
Standard car wheels	10.50 to 11.00
Light cast and stove plate	7.00 to 7.50

BUFFALO

Pig Iron Strong—Heavy Sales

Office of THE IRON TRADE REVIEW,
Buffalo, Aug. 6.

Pig Iron.—Sales and inquiries, surface conditions and the undertone, all indicate a stronger market, and the prospects of continued improvement. The sales for the week totaled about 25,000 tons and on top of this there remained a heavy tonnage of inquiries still unsatisfied. Prices on the various grades of pig iron have stiffened, one interest obtaining $14.50 at the furnace for No. 2X foundry. The continued volume of specifying, taxing the furnaces to their capacity, indicates that consumers evidently underestimated their requirements when contracts were placed. We quote the following range, f. o. b. furnaces, as a key to this week's market:

No. 1X foundry	$14.25 to 14.75
No. 2X foundry	14.00 to 14.50
No. 2 plain	14.00 to 14.25
No. 3 foundry	14.00
Gray forge	13.75 to 14.00
Malleable	14.25 to 14.75
Basic	14.25 to 14.75
Charcoal	15.75 to 17.50

Finished Material. — The week marked a further crowding of the capacity of the mills, the extension of deliveries and the more general tendency of consumers to offer premiums of from $1 to $3 and $5 and up per ton in order to get out their requirements inside of the delivery dates now being posted by both the leading interest and the independent mills. The mills are now spending more effort to get out material under contract for customers than they are in securing new business. One of the mills has practically closed its books for the remainder of the year. Steel shafting was advanced $1 per ton the latter part of the week. Deliveries on bars are from 12 to 15 weeks; on plates about the same and on structural the mills require even more time. Sheet steel piling has shown some activity and the consumers seem willing to contract at the recent advance. The wire and wire products lines are reported very good, with the fall prospects for a heavy tonnage excellent. The dealers seem to be decidedly optimistic.

The Lackawanna Bridge Co. has received the contract for the steel in the King Sewing Machine Co.'s factory addition at Buffalo, requiring about 300 tons. The Buffalo Structural Steel Co. secured the contract for steel in the Crosby Co.'s factory addition, Buffalo, taking 710 tons.

The Lackawanna Steel Co. will fire a new open-hearth furnace on the first and another on Aug. 15. With these two new furnaces in operation the plant will then have a battery of 14 open-hearth furnaces. The rail mill is being worked double time and as many of the company's other mills as material can be secured for.

Old Material.—The better feeling in the other scrap markets has finally had its effect upon the Buffalo district. The dealers report an improvement in conditions. Local consumers are materializing with inquiries and specifying. The added life to the situation has caused a stiffening in prices, which, however, has not as yet deterred the tendency on the part of users to secure their requirements. The principal activity was in heavy melting, railroad wrought, machine cast scrap, turnings and borings. We quote the following prices, per gross ton, f. o. b. Buffalo, as substantially representing the market:

Heavy melting steel	$12.75 to 13.25
No. 1 railroad wrought scrap	13.50 to 14.00
No. 1 R. R. and mch. cast scr'p	13.00 to 13.75
Old steel axles	15.00 to 16.00
Iron axles	21.00 to 22.00
Car wheels	13.00 to 13.75
Railroad malleable, scrap	11.50 to 12.25
Wr'ght iron and soft steel turn.	8.25 to 8.75
Cast iron borings	7.50 to 8.00
Low phosphorus steel scrap	15.75 to 16.25
Old iron rails	15.00 to 15.50
Tank iron	10.00 to 10.25
Boiler plate, sheared	13.75 to 14.25
Pipe and tank	9.50 to 10.00
Stove plate	11.00 to 11.50
Sheet iron	7.00 to 7.50
Locomotive grate bars	11.00 to 11.25

Belgian Pig Iron Output.—During the month of June last the production of pig iron in Belgium totalled 196,971 tons, as against 170,400 tons in the corresponding month of 1911. The total for the first half of this year was 1,121,561 tons, as against 1,024,000 tons in the first half of 1911.

The Cole Motor Car Co., Indianapolis, has increased its capital from $300,000 to $500,000.

METAL MARKETS

Pig Tin Has Made Net Advance

New York

July 30.

Tin.—Daily advances in the London standard tin market since July 24, have put the price of spot metal well over £204 again and brought the local price up to above 45c per pound. The net advance for this week in the foreign market is £5 7s 6d and 1¼c in New York. The most important development respecting future supplies of tin, was the announcement by the Dutch authorities that offerings of Banca tin during 1913 would be reduced by about 1,800 tons. This news was made use of by the London speculators to advance the market on. Domestic consumers bought moderate supplies during the week. At the close of business today spot sold at 45.25c, in the outside market, and August was offered at 45.20c with 45.10c bid. Arrivals of tin since July 1, aggregate 5,226 tons and there are 2,097 tons afloat. The London market closed firm at £204 7s 6d for spot and £202 for three months.

Copper.—During the past few days demand from consumers of copper has been less active than last week, and prices are again somewhat irregular. Resale lots are offered at about ⅛c per pound under the asking prices of the leading producers. The sentiment of the trade is that with a resumption of active buying by large consuming interests, first hands will again have control and the probabilities are that the market will advance to a new high level. Electrolytic has sold in small quantities at 7.50c cash New York, and lake at 17.62½c.

Exports since July 1, are 24,652 tons. The London standard market closed easy today at £77 10s for spot and three months. This is a decline of £1 10s and £1 7s 6d respectively since July 23.

Lead.—Independent sellers continue to offer lead at about 10 points under the leading seller and are taking a fair amount of business. Shipments to New York territory are held at 4.75c by the American Smelting & Refining Co.

Spelter.—Reports of sales of spelter at 7c in St. Louis are discredited by local buyers, who claim to find it difficult to secure prime western under 7.25c in New York. The demand here is fair, and a material decline in price during the next few months would be a pleasant surprise to consumers in this territory.

Antimony.—A general advance in antimony prices has been made. Cookson's is 8.60c; Hallett's is 8c, and Hungarian is from 7.50c to 7.75c.

Chicago

July 29.

New Metals.—While there is a fair amount of buying the volume of business is not what it should be when general business conditions are considered. Prices, however, are firm, there being a marked advance on pig tin and lead and copper showing much stronger.

We quote dealers' selling prices, f. o. b. Chicago, as follows:

Lake copper, carload lots, 17⅞c; casting, 17½c; smaller lots, ¼c to ¾c higher. Spelter, car lots, 7.15c to 7.20c; lead, desilverized, 3.35c in 50-ton lots; corroding, 4.70c; sheet zinc, 8.75c, f. o. b. La Salle, in car lots of 600-pound casks; pig tin, 46.50c; Cookson's antimony, 8½c; other grades, 7½c to 8c.

Old Metals.—The amount of buying in the present market is not satisfactory to dealers and has culminated in a shading on a number of items. There is little speculative trading, as dealers and consumers are content to hold stocks against an advance and to turn over material only when justified by immediate needs.

We quote dealers' selling prices, f. o. b. Chicago, as follows:

Copper wire, crucible shapes, 14½c; copper bottoms, 13½c; heavy red brass, 11½c; heavy yellow brass, 9¼c; No. 1 red brass borings, 11½c; No. 1 yellow brass borings, 8¾c; brass clippings, 9¼c; lead pipe, 4c; zinc scrap, 5¼c; tea lead, 3¾c; No. 1 aluminum, 16c; No. 1 pewter, 30c; block tin pipe, 40c; tin foil, 37c; linotype dross, 3⅛c; electrotype dross, 3⅞c; stereotype plates, 4¼c; stereotype dross, 3⅛c; prime slab zinc dross, $100 a ton.

Named as Agents.—E. A. Williams & Son, Inc., Jersey City, N. J., have been appointed exclusive agents of the Vanadium Metals Co., for New York and New Jersey in the jobbing of castings produced from the special non-ferrous metals manufactured by the latter company. The new department will replace the gray iron foundry department of the Williams plant. The gray iron foundry had been idle for over a year.

BREAK FROM BROKERS

And Arrange to Sell Coke Through a New Agency—The Effect.

The announcement by the Connellsville coke producers the past week of a break in their selling arrangement with a Pittsburgh company, and opening of a new sales arrangement through joint selling agency for the Thompson-Connellsville Coke Co., the Fayette Coke Co., the Century Coke Co. caused no surprise in the Pittsburgh coke market, where the internal dissensions in the coke trade were well known. The Producers Coke Co., by which the new agency will be known, with its various connections, is estimated to have unsold about 55,000 tons of coke a month for 1912. On the other hand, coke producers who are acting independently, or sticking to the old brokers, in the marketing of their product, have a much larger free tonnage. The circular issued and sent broadcast by the new concern, however, accomplished its result in putting consumers on their guard and also an end to any contract coke sales for the time, and turned the coke market over to prompt sales only. Prices dropped quickly, each side of the controversy seeking to clear its yards of unsold coke. The actual shortage in coke, however, has been quickly discovered, and such surplus stocks as existed were soon in the hands of consumers.

The older sales agencies have acted in unison with the new concern on contract coke sales, and are holding to $2.50 for furnace coke, but the market for spot has been left wide open. Pittsburgh coke brokers say that the new arrangement will not have any permanent effect in the movement for better prices. So many ovens are now idle that it will take unusual effort to make any impression on the low tonnage that is possible of production at this time. The working organizations of all the plants that were closed have been scattered and labor is very scarce.

The Carnegie Steel Co., Pittsburgh, is installing shower baths in open-hearth mill No. 1 and plate mill No. 32 for the use of workmen. The company probably will install the same equipment at all of its plants in the near future.

RAISING FUND

To Build Memorial to McKinley at Niles, O.

The accompanying dispatch to Joseph G. Butler Jr., Youngstown, O., offers fair index to the generous manner in which is being greeted a campaign to raise a fund to establish a memorial to President Wm. McKinley at Niles, O. Other firms and individuals are and have been giving liberally.

Headed by Mr. Butler, the campaign was opened on the evening of July 25, in City park, Niles. Since then the movement has been given such an enthusiastic impetus that subscriptions have already mounted up high and crowning success to this most worthy and noble cause is assured. Mr. Butler, who conceived the idea, is highly gratified at the progress of the campaign and feels deeply the responsive spirit of the donors and is also greatly pleased with the splendid assistance being given by those assisting him in actively campaigning.

Credit for the success of the movement in way of donations will be shared in a marked degree by prominent iron and steel men of the country, who have responded liberally to requests for subscriptions. Mr. Butler, being so well known to the trade and having a universal acquaintance, makes a substantial instrument through which teams organized to raise money, are working and he was furnished assurance by inspiring demonstrations at the opening of the campaign that he will be given strong aid. The campaign is being continued nightly, speakers from various cities lending their voices in behalf of the movement. The city of Niles is stirred to its patriotic senses as never before.

The campaign was opened with a banquet in City park, which comprises 10 acres and has been donated by the city to the McKinley Memorial Association as a fitting place on which to erect the memorial. It is on this site that the little white school house, where Mr. McKinley obtained his first learning, stood. Within a stone's throw is the birthplace of the martyred president. Mr. Butler attended the same school with Mr. McKinley. Sitting at the right of Mr. Butler at the opening of the campaign, was Mrs. Maria Kyle, aged 83, who was the first teacher from whom Mr. McKinley received instruction. In deference to this distinction, Mr. Butler introduced her as the first speaker of the evening. Her face lighted with the fire of love and pride, she arose, looking much younger than her years would indicate. But the crowd would not let her speak until tribute had been paid her. Arising in unison, the great audience waved flags, handkerchiefs and hands, cheering time and again, the demonstration lasting 15 minutes. It was a most touching scene and its inspiring effect will never be forgotten by those present. After making a charming address, dealing vitally personal with the boyhood of the great man, Mrs. Kyle was again the object of a loving demonstration. Others followed her and since then the campaign has been continued with unabated vigor.

Among those who have contributed are: Joseph G. Butler Jr., Youngstown; Judge E. H. Gary, chairman of the United States Steel Corporation; A. C. Dinkey, president of the Carnegie Steel Co.; John A. Topping, chairman of the Republic Iron & Steel Co.; W. A. Thomas, president of the Brier Hill Steel Co.; McKeesport Tin Plate Co.; E. A. S. Clarke, president of the Lackawanna Steel Co.; Willis L. King, vice president of Jones & Laughlin Co.; Andrew Carnegie, John D. Rockefeller, D. R. Hanna and L. C. Hanna, Cleveland; Senator Theodore E. Burton; Frank Mason, United States consul general at Paris; Myron T. Herrick, United States ambassador to France; C. A. Carlisle, president of the Studebaker Corporation; Seth Low, former mayor of New York; J. G. Schmidlapp, Cincinnati; J. G. Milburn, Buffalo, at whose home Mr. McKinley died; Samuel Mather and W. G. Mather, Cleveland; H. G. Dalton, of Pickands, Mather & Co., Cleveland; John Gallagher, Youngstown; Frank S. Witherbee, of Witherbee, Sherman & Co., New York City; W. A. Rogers, of Rogers, Brown & Co., Buffalo.

McKeesport, Pa., July 27, 1912.
Trustees McKinley memorial fund, Niles, O.:
The McKeesport Tin Plate Co. embraces with pleasure the opportunity to contribute $1,000 in cash to the perpetuation of the memory of William McKinley, the Christian gentleman, the profound statesman, and the father of modern present-day American industries, by the erection of a suitable birthplace memorial in his natal town, Niles, O.
McKeesport Tin Plate Co.
By E. R. Crawford, President.

STEEL REPORT

Earnings for Quarter Were Looked Upon as Satisfactory.

Gross earnings of the United States Steel Corporation for the second quarter of the year ended June 30, reached $25,102,265, an increase of $7,275,292 over the first quarter. After the payment of dividends, there remains from the second quarter operations a surplus of $56,482, which compares with a deficit of $6,292,134 for the first quarter. This improvement in earnings reflects the heavy and more profitable tonnage upon which the leading interest has been working during the closing quarter. The regular dividend of 1¾ per cent on the preferred stock is payable Aug. 30, and of 1¼ per cent on the common stock, Sept. 28. A comparative statement of the gross earnings and surplus between the first two quarters of the year, is as follows:

Quarter ending	Total earnings.	Surplus.
March 31, 1912	$17,826,973	$6,292,134*
June 30, 1912..	25,102,265	56,483

*Deficit.

The total earnings during the various quarters during the past two years have been as follows:

March 31, 1910.....	$37,616,876
June 30, 1910.....	40,170,960
Sept. 30, 1910.....	37,365,187
Dec. 31, 1910.....	25,990,978
March 31, 1911.....	23,519,203
June 30, 1911.....	28,108,520
Sept. 30, 1911.....	29,522,725
Dec. 31, 1911.....	23,105,115

The complete report for the second quarter, ended June 30, 1912, is as follows:

	Earnings.	Less: Interest.	Balance.
April	$8,316,245	$807,038	$7,509,207
May	9,694,115	847,294	8,846,821
June	9,593,357	847,120	8,746,237
Total earnings			$25,102,265
Depreciation, etc.			6,672,971
Net income			$18,429,294
Interest			5,714,111
Balance			$12,715,183
Dividends:			
Preferred, 1¾ per cent			$6,304,919
Common, 1¼ per cent			6,353,781
			$12,658,700
Surplus for quarter			$56,483
Unfilled orders on hand:			Tons.
June 30, 1912			5,807,346

The steamer W. P. Palmer, of the Pittsburgh Steamship Co., unloaded 11,044 gross tons of iron ore in three hours and 15 minutes at Conneaut, O., July 24. This is the unloading record at that port.

POOR TRACKS

Caused New York Central Wreck and Not Broken Rail, Says Report.

A broken rail was not the cause of the wreck on the Twentieth Century, Limited, train of the New York Central system, at Hyde Park, N. Y., on March 13, 1912, but the accident was due to a low spot in the track, according to the finding of the public service commission of the state, which has just filed the report of its investigation at Albany. The commission declares that the breaking of the rail appears to have been the result, and not the cause, of the accident. The various pieces of the broken rail were collected and carefully examined but no flaw could be discovered.

At the point where the accident occurred, the outer rail was supposed to be elevated about 4 inches, but it was discovered by the commission that this elevation had been reduced from 4⅛ inches to 2¾ inches in a distance of about 50 feet. This drop, it is stated, is about equal to the engine truck and driving wheel flanges and is sufficient to cause a serious lurch in the locomotive with a consequent increase in pressure against the outer rail.

The commission suggests that the practice of running high speed trains, especially in the winter, when tracks are unavoidably in poor condition, causing delays and efforts of engineers to make up speed, should be discontinued. As a result of conferences with the operating officials in the New York Central and Pennsylvania systems, it is stated that it is proposed to lengthen the running time of the fast trains between New York and Chicago next winter from 18 to 20 hours.

One Furnace Out, Another In

Chicago, July 31.—Furnace B of the Iroquois Iron Co. was blown out Tuesday and furnace D blown in to replace it. Both of the new furnaces, C and D, are now in operation and the older stacks are idle. The last blown in is working nicely. This makes no change in production of the Iroquois furnaces, but it may be possible to obtain better results with the new stack until the B furnace has been overhauled.

Locomotives for Brazil.—The Central Railway of Brazil has placed an order for 10 consolidation locomotives with the American Locomotive Co. and the Paulista Railway of Brazil has ordered three 10-wheel locomotives of large size from the same builder.

MANY THOUSANDS

Attend Annual Outing of Cincinnati Metal Trades Association.

The annual outing of the Cincinnati Metal Trades Association was held at Chester Park, that city, on July 27. Over 35,000 people attended, being mostly those connected directly or indirectly with the association. Practically every machine shop in the city was closed on that day, the object being to give every employe a chance to attend the outing. A field day, consisting of 15 events, was held in the afternoon, in which almost every plant employing machinists in Cincinnati was represented. In the evening, the officials of the association held a banquet at the park, at which short talks were given by a number of those present. The day was void of serious accidents, or anything to spoil the pleasure of those attending.

HEAVY TONNAGE

Is Being Inquired For by Brooklyn Rapid Transit Co.

New York, July 31. (By wire.)—The Brooklyn Rapid Transit Co. is again asking prices on structural material for third tracking the elevated and subway extensions amounting to about 90,000 tons. This is in addition to requirements for the Interborough of about an equal amount, which is expected to reach the market shortly. Brooklyn Transit work has been under consideration off and on for about four years and even now all franchise preliminaries which would insure early awards have not been completed. The advancing steel market is evidently spurring these companies to enter the market at this time.

Warehouse Prices Are Advanced

New York, July 31. (By wire.)—Waverly warehouse prices have again been advanced by the Carnegie Steel Co., effective tomorrow. In steel bars, the advance is $1 to 1.90c for New York delivery, and in plates and shapes $2 to 2.05c, New York.

COKE COMPLAINT

Of Youngstown Sheet & Tube Co. Again Being Heard.

H. R. Moore, of Youngstown, O., and T. W. Whittlesey, of Toledo, O., were the witnesses questioned Monday in New York City in the hearings of the Youngstown Sheet & Tube Co.'s complaint against the various railroad companies in respect to the coke and coal freight rates now in force between the Connellsville and Youngstown districts. The presiding officer is Special Examiner Garry, for the Interstate Commerce commission.

Mr. Moore, who is traffic manager of the Republic Iron & Steel Co., was questioned with a view to show that the iron and steel companies in the valleys are in a prosperous condition generally, in spite of the railroad freight rates which they claim to be exorbitant.

Buys Coking Coal Land

Pittsburgh, July 31. (By wire.)—Julian Kennedy, Pittsburgh, is the head of a new company called the Poland Coal Co., that has just purchased 1,100 acres of coking coal land in Greene county, which will be developed for coke purposes at once. The property was purchased at $880,000 from J. V. Thompson, Uniontown. The coke plant will be erected on the Monongahela railroad at a station called Greenboro. It is the largest coke operation in Greene county. The company is capitalized at $1,000,000.

Purchased the Business

John G. Johannigman, of the Oesterlein Machine Co., and Charles Koebbe, of the Fosdick Machine Tool Co., both of Cincinnati, have bought the business of Cordesman, Meyer & Co., woodworking machinery manufacturers, also of that city, and will operate that plant in the future. The new company will be known as the Cordesman-Meyer Co., and the intention is to enlarge the plant as soon as possible. The purchasers have arranged for a five-year lease, with privilege of purchase of the property, which is located at the southwest corner of Central avenue and Augusta street.

Wm. Townsend, formerly with the Connersville Blower Co., in charge of their Chicago office, has accepted a position as assistant manager of the By-Products Coke Co. of Chicago.

Utilization of Electric Power for Iron Mining--II

The Application of Electricity to Hoisting, Pumping, Tramming, and Other Mine Operations—The Ilgner System Hoist

In the last issue of THE IRON TRADE REVIEW the general problem of utilizing electric power in iron mines was briefly discussed, special reference having been made to the developments of the Cleveland-Cliffs Iron Co. on the Marquette range. The plant and equipment which the Cleveland-Cliffs company found it necessary to establish for the generation and distribution of electric power was described in detail. This article will discuss the application of electric power at the mines, covering especially the problem of electric hoisting which is of paramount importance. Power is used in iron mining for drilling, tramming, pumping, ventilating, hoisting, compressing air, crushing rock and for minor operations. Also the problem of lighting is always present. Owing to the distance between the different points where the power is applied, the question of transmission as well as that of utilization is of importance. Three forms of power are generally used, steam, compressed air and electricity, although originally, of course, the power must come from coal or falling water. Electricity is now used directly for almost all mining operations requiring power except drilling, but the problems involved in electric hoisting and air compressing are the most serious.

In considering electric power for mining purposes it is found that the load fluctuates greatly, but that the average values are not as high as might be surmised. At one of the prominent mines on the Marquette range, which has a vertical depth of 550 feet, an investigation developed the fact that the average hoisting load per day amounts to 70 horsepower; the air compressor load averages 430 horsepower, the pump load 100 horsepower and the underground haulage load 50 horsepower, the total being only 650 horsepower. This mine has produced as much as 600,000 tons of ore in one year.

To provide for the hoisting requirements, however, a much greater capacity than that indicated by the average load must be considered. The average for the mine mentioned above is only 70 horsepower, because the hoist is necessarily idle a portion of the time. The average amount of power consumed during a *single hoist* is 575 horsepower, while the maximum required to accelerate the load is about 1,000 horsepower. The average time per hoist is about 15 seconds, the skip making a round trip in approximately 45 seconds. The time required to accelerate the load is about 4 seconds. The curve shown in Fig. 8 graphically illustrates the power required during a single hoist. The excessive peak load is plainly evident on this diagram. In designing an electrical plant this peak must be considered.

Although the installation of a hoisting plant may require a considerable outlay of money, the cost of raising the ore may at the same time be but a small part of the total operating charge. In all cases, however, the output of the mine is limited by the capacity of the hoist and the latter thus becomes especially important. As a rule, mining shafts are not well situated with respect to the supply of coal and water and power generated in the ordinary way is frequently expensive. In these cases the utilization of hydro-electric power often results in materially reduced costs.

Steam hoisting plants are notoriously inefficient. They are generally equipped with non-condensing engines and with the extremely intermittent load on both engines and boilers, the economy is necessarily very poor. The steam engines are designed for starting conditions where they take steam for the full stroke; this necessitates their running with an early cut-off when hoisting. In many cases, therefore, the electric system of hoisting has advantages which give it a decided preference. The power house may have the most favorable location and the power may be generated in large quantities at highest efficiency and distributed over a great area. Electricity may be easily applied to all work both on the surface and in the interior of mines and lends itself readily to extensions in the development of the property. With one generating station and many individual loads, an overlapping of

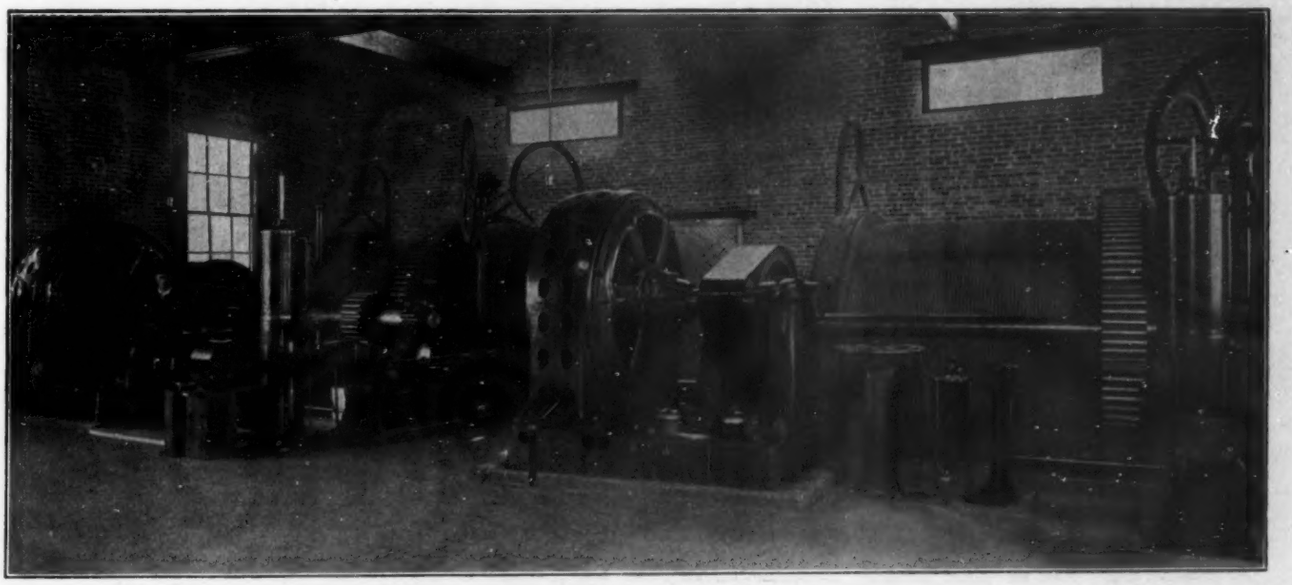


FIG. 1—ELECTRIC SKIP AND CAGE HOISTS EQUIPPED WITH INDUCTION MOTORS AT THE LLOYD MINE, NORTH LAKE DISTRICT

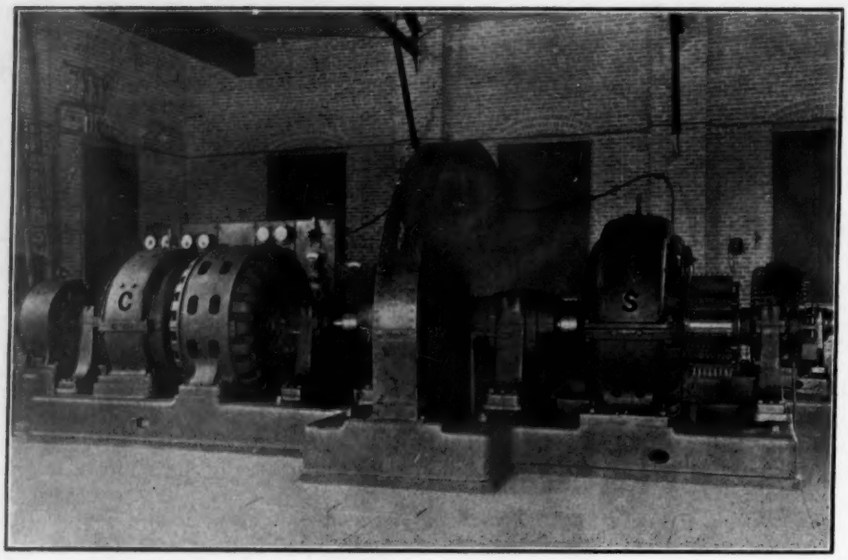


FIG. 2—MOTOR GENERATOR SET WITH FLY-WHEEL FOR FURNISHING ENERGY TO ELECTRIC HOISTS AT THE NEGAUNEE MINE

peaks occurs so that it is possible to operate the system with a reasonably good load factor. For underground pumping and draining and where the hoists are located in the mine, electricity has every advantage.

In applying electricity to large mine hoists three general systems are in use. Shunt-wound, direct current motors or polyphase alternating current motors, either induction or synchronous, may be geared directly to the hoist drum, or a motor-generator set may be interposed between the line and the hoist motor. The latter case may be considered the highest development of the electric hoist. A number of inventors have perfected detailed methods for the application of motor generator sets to mine hoisting and one of the favorably considered methods was developed in Germany and is known as the Ilgner system.

The Cleveland-Cliffs Iron Co. has recently installed a typical Ilgner system electric hoist at the Negaunee mine on the Marquette range, the details of which include many features of interest. This hoist was placed in operation early in May, 1912. The electrical equipment was furnished by the Westinghouse Electric & Mfg. Co., Pittsburgh. The Negaunee mine is one of the most extensively developed on the range and has an annual capacity of about 400,000 tons. Its greatest vertical depth is approximately 1,000 feet.

Ilgner Hoisting Equipment

The hoisting outfit includes a motor-generator set, Fig. 2, equipped with a 13½-ton fly-wheel; a cage hoist, Fig. 5, and a skip hoist, Figs. 3 and 4. The motor-generator set includes a 350-horsepower, 2,200-volt, 60-cycle, 3-phase, induction motor designed to operate at 580 to 690 revolutions per minute. This machine is designed for a current of 87.3 amperes per terminal. Immediately adjacent to the induction motor is a 150-kilowatt direct-current generator, *C*, Fig. 2, for the cage hoist. This generator is wound for 200 volts with a normal rating of 750 amperes. At the extreme end of the shaft is a direct-current exciter, 25 kilowatts capacity, wound for 220 volts, 114 amperes. The fly-wheel is attached between the induction motor and the large generator for the skip hoist. In Fig. 2, *S* is a 400-kilowatt machine with a normal output of 762 amperes. It is wound for 525 volts. The speed of the induction motor is controlled by a variable resistance in its rotor circuit. On account of the magnitude of the currents involved this resistance consists of an automatic water rheostat. The electrodes of the rheostat are controlled by a small motor, the resistance, of course, varying with the distance between the plates. This device is so connected that when the load on the induction motor is suddenly increased, such as at the beginning of a hoist, the speed is reduced, permitting the fly-wheel to give up some of its energy and thus maintain a fairly constant load on the transmission line. The effect of this is to eliminate from the line the excessive peak shown in Fig. 8. The current in the hoist motors is controlled, varied and reversed through controllers of the usual railway type placed in the field circuits of the generators. The first point on the controller operates a contactor which closes the main circuit from the generator to the motor. Instead of the customary salt water, a sodium carbonate solution is used in the automatic skip regulator.

Voltage for Skip and Cage Hoists

It will be noted from the foregoing description that the skip hoist operates at 525 volts and the cage hoist at 200 volts. These values were adopted so that the two direct current generators in the motor generator set might be used interchangeably with either hoist motor, the normal current output of the generators being the same. When the 400-kilowatt generator is connected to the 200-horsepower cage hoist, a resistance is placed in series with the field of the generator so that with the controller in the full on position, the maximum voltage is about 200 instead of the normal tension of 525 volts. This prevents excessive voltage being applied to the 200-volt hoist motor. An auxiliary resistance is placed in parallel with the field of the 150-kilowatt generator in order to

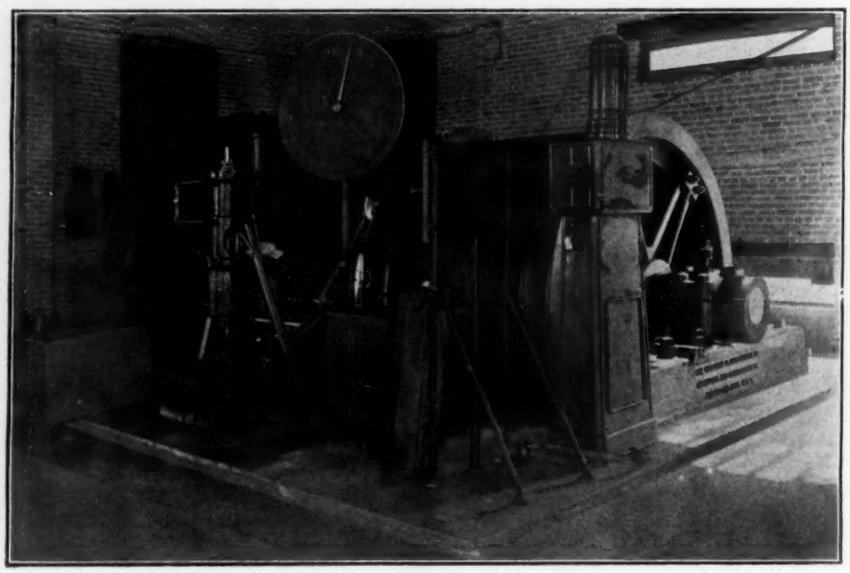


FIG. 3—MOTOR-DRIVEN SKIP HOIST AT THE NEGAUNEE MINE, SHOWING DETAILS OF PNEUMATIC BRAKE AND WINDING DRUM

equalize the current so that the same controller may be used with either generator. The generators at no time run in parallel. Either generator may be connected to either hoist, but both cannot operate on one hoist.

The Skip Hoist

The skip hoist is shown in detail in Figs. 3 and 4. It consists of a 500-horsepower, direct-current, 525-volt motor, operated by the 400-kilowatt direct current generator in the motor-generator set. The hoist motor has a normal current rating of 800 amperes and is designed to operate at 60 revolutions per minute. The motor is direct-connected to the winding drum, which is 8 feet in diameter and 5 feet, 6 inches in length. The hoist was furnished by the Wellman-Seaver-Morgan Co., Cleveland, and in its design the following fundamental assumptions were made: Weight of skip balanced, 6,000 pounds; ore load, 10,000 pounds; weight of 1,000 feet of rope, 2,000 pounds; hoisting speed, 1,500 feet per minute; average number of hoists per hour, 30. The motor, however, is designed for a maximum of 60 hoists per hour for two hours without overheating and the specifications require it to work continuously at 40 hoists per hour. The input at this speed is 350 horsepower. The motor-generator flywheel is designed to take care of all peaks in excess of the average with a maximum slip of 20 per cent. The brake, which is normally held on by a heavy weight, is released by compressed air during the hoisting period. Should the drum tend to over-wind, due to the neglect of the engineer, a safety stop opens a valve which releases the air pressure and causes the brake to be applied.

In the case of the cage hoist, Fig. 5, the motor is geared to the hoisting drum. This hoist was furnished by the Wellman-Seaver-Morgan Co., Cleveland, and the motor by the Westinghouse Electric & Mfg. Co. The cage hoist motor has a capacity of 200 horsepower at 200 volts and 824 amperes, being designed to run 250 revolutions per minute. Its current is furnished by the 150-kilowatt generator in the motor-generator set. The gears are of the spiral herring-bone type with a ratio of approximately 6 to 1. The gears are machine cut, the pinion being steel and the gear cast iron; they were furnished by the Falk Co., Milwaukee. The pinion is 18 inches and the gear wheel 12 feet in diameter. In designing the cage hoist the following fundamental data were considered: Weight of cage, 5,000 pounds, overbalanced, 2,000 pounds; maximum load, 30 men, 4,500 pounds; rope 1,000 feet, weighing 2,000 pounds; hoisting speed, 800 feet per minute. The hoists are equipped with a mechanical retardation device which prevents too rapid application of power and over-winding. This consists of a reach rod connected to the controller handle actuated by cams on the periphery of a wheel geared to revolve 7/8 of a revolution for 1,000 feet of hoisting.

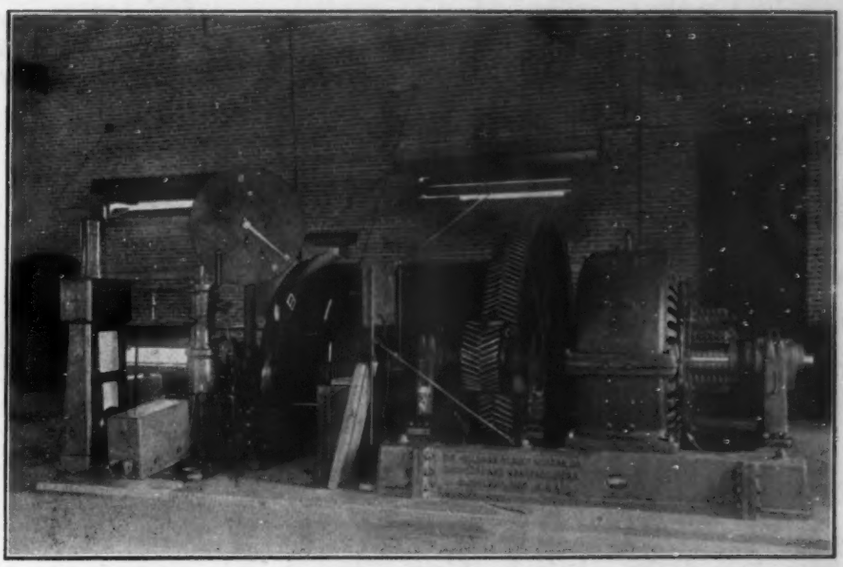


FIG. 5—MOTOR-DRIVEN GEARED CAGE HOIST AT THE NEGAUNEE MINE

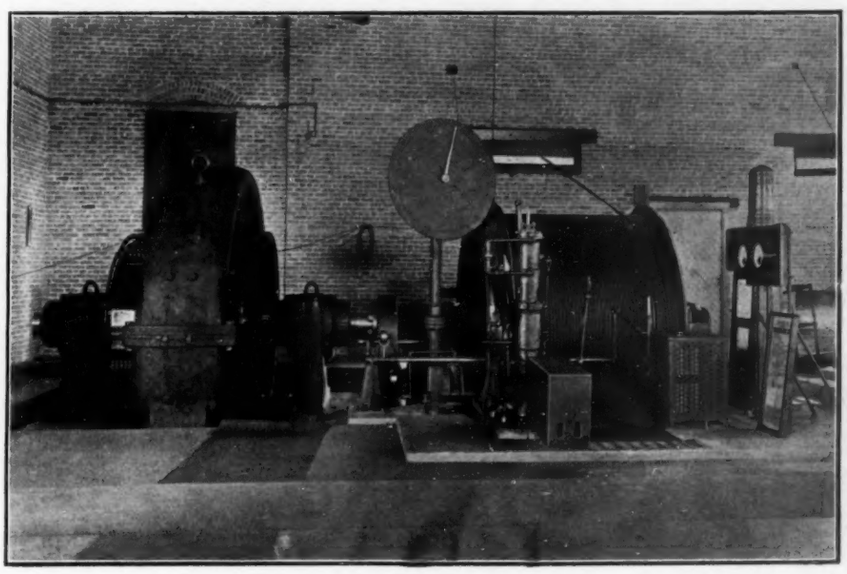


FIG. 4—ELECTRIC SKIP HOIST WITH DIRECT-CONNECTED MOTOR

Comparison of Steam and Electric Hoisting Economies

In comparing the economy of steam and electric hoisting it is found that about 200 tons of ore is hoisted per pound of coal burned when using steam. Assuming 4½ pounds of coal per kilowatt-hour, this is equivalent to 900 tons of ore hoisted per kilowatt-hour.

In addition to the Ilgner hoist at the Negaunee mine, the Cleveland-Cliffs Iron Co. has installed several hoists operated by induction motors placed directly on the main line. Figs. 1 and 6 show three hoists of this character at the Lloyd and Morris mines in the North Lake district. The skip and cage hoist at the Lloyd mine are practically identical. They are each operated by a 400-horsepower General Electric induction motor. The motor receives its current at 2,100 volts and is rated at 104 amperes. These are third motion hoists, there being two sets of spur gears between the drum and the motor. The skip hoist at the Morris mine, Fig. 6, is operated by a 400-horsepower motor connected to the drum by one set of spur gears and one set of spiral herring-bone gears. In order to supply 2,200-volt current to the hoist motors and other electrical apparatus in the North Lake district, three 500-kilowatt Allis-Chalmers transformers are installed.

For operating underground haulage

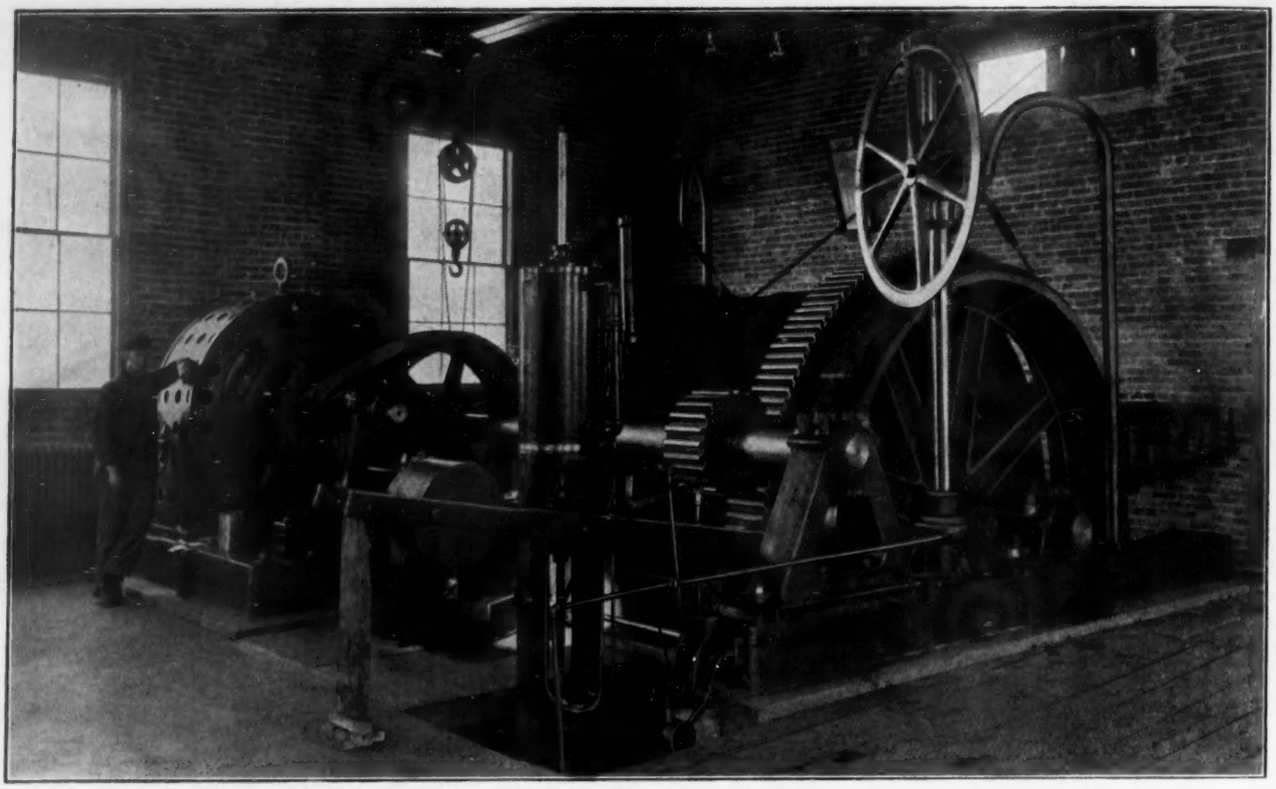


FIG. 6—THIRD MOTION MOTOR-DRIVEN CAGE HOIST AT THE MORRIS MINE, NORTH LAKE DISTRICT

systems, electricity has been used in iron mines for a number of years. To provide for this load at the Negaunee mine the Cleveland-Cliffs Iron Co. has installed a motor-generator set, consisting of a 215-horsepower, 2,200-volt, Westinghouse synchronous motor, coupled to a 400-ampere, 250-volt, direct-current generator. The set operates at 600 revolutions per minute. The Cleveland-Cliffs Iron Co. also uses motors extensively for auxiliary service around its properties. For instance at the Cliff-Shaft mine there is a 75-horsepower motor operating the large crusher and 25-horsepower motors on each of the smaller crushers. The tram on the stockpile trestle is operated by motors and the

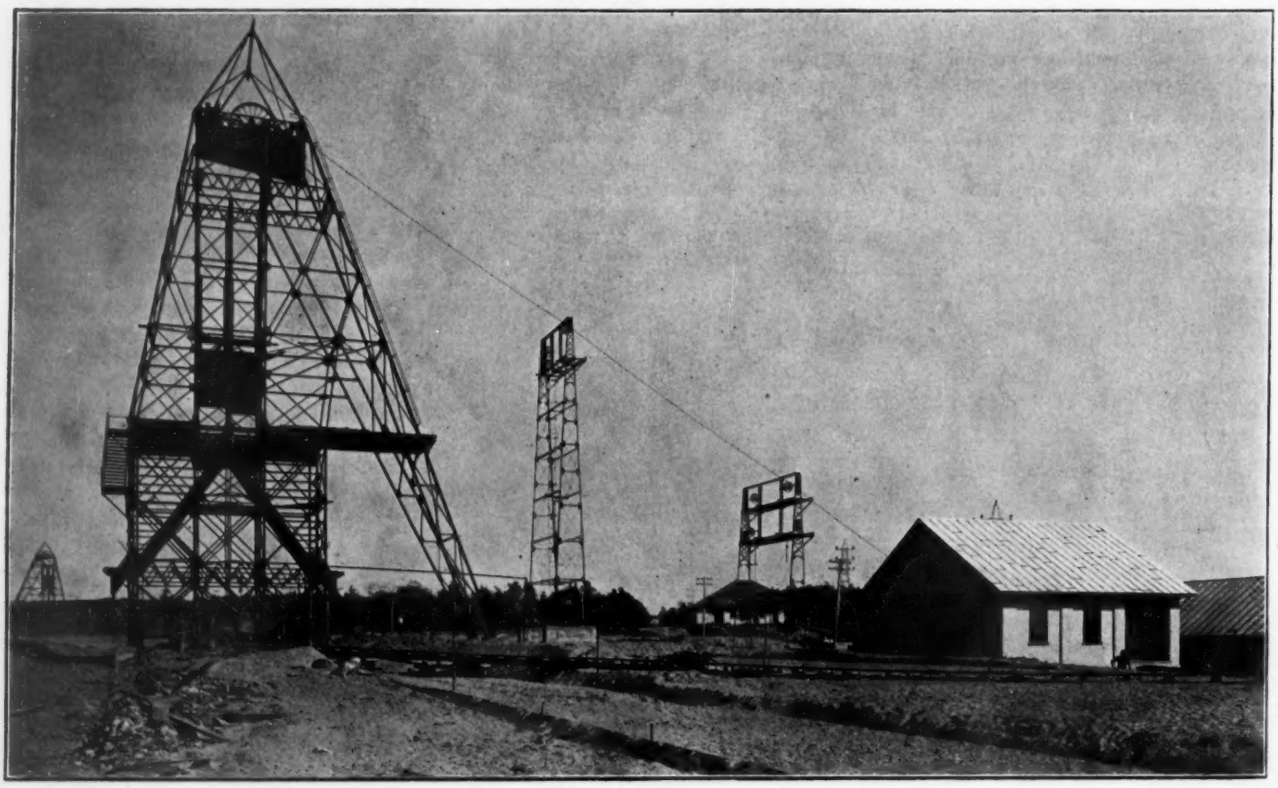


FIG. 7—MORRIS MINE, NORTH LAKE DISTRICT, SHOWING THE STEEL HEAD FRAME AND FIREPROOF MOTOR HOUSE

shops at Ishpeming are also motor-driven.

Gradually, also, electricity is supplanting steam for pumping water. Electricity is especially suitable for this purpose in many instances, since turbine pumps can be used to advantage. In the North Lake district the Cleveland-Cliffs company has installed an 800-gallon, Prescott pump, driven by a 350-horsepower motor. This operates against a head of 1,000 feet. Two smaller motor-driven pumps, each with a capacity of 300 gallons, 400 foot lift, also are installed in the North Lake district. At the Salisbury mine there is a 350-horsepower motor-driven pump and at the Princeton mine a 50-horsepower outfit. In practically every case these pumps are of the reciprocating type.

Compressing Air Electrically

The successful application of electricity to air compressing has been attended with some difficulties on account of the extremely intermittent character of the load. Mine air compressors must necessarily be sufficiently large to take care of the maximum demand and frequently operate for long periods at half or even quarter load. With these conditions the electric motor is not especially efficient and the cost per thousand cubic feet of air compressed is correspondingly high. Two methods have been devised to overcome this. The Anaconda Copper Co., at Butte, Mont., employs a very large receiver, into which the air is delivered by the compressor and from which it is drawn for consumption. The size of this receiver is such that the load on the compressor is equalized and the motor kept operating nearly at its maximum capacity. This installation is said to be exceptionally successful. In the Lake Superior iron district, however, the problem is being solved by installing compressors in sufficiently small units to obtain maximum motor efficiency. For instance, if the maximum air consumption of a mine is 4,500 cubic feet, it would be good practice to install a single 4,000-cubic foot steam-driven compressor. An electrical compressor of this size, however, would be very inefficient, but if four 1,000-cubic foot, motor-driven units were installed and so connected that they would start automatically as the load increases, efficiency could be obtained. The disadvantage of this plan is that the first cost is high and the floor space required for the machinery considerable. In the North Lake district the Cleveland-Cliffs Iron Co. now has a 1,690-cubic foot Ingersoll-Rand, two stage, motor-driven compressor in operation and it is said to give satisfactory results. The machine is driven by a 250-horsepower, 150-revolutions per minute, 220-volt, 3-phase, Allis-Chalmers synchronous motor. A 150-horsepower, motor-driven compressor will shortly be installed at the Salisbury mine.

Problems to be Solved

As suggested by the foregoing, there are still many problems to be solved in connection with the application of electric power to iron mining operations. However, great progress has been made during the past few years and at present, under ordinary conditions, electric power developed by a hydro-electric plant will show an appreciable economy. As a result of the success of the Cleveland-Cliffs Iron Co. in this field on the Marquette range, an extensive hydro-electric plant is now being constructed near Iron Mountain, Mich., for the mines on the Menominee range and the Great Northern Power Co. of Duluth is seriously considering the extension of its transmission lines into Hibbing and other highly developed fields on the Mesabi range.

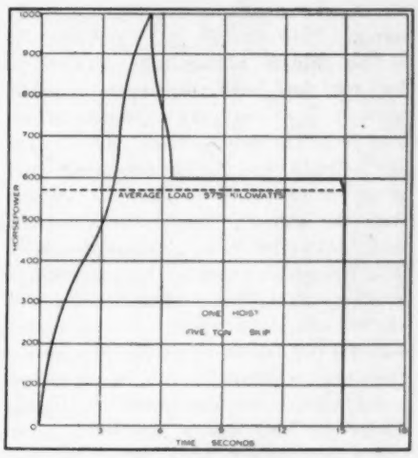


FIG. 8—HOIST DIAGRAM, SHOWING PEAK LOAD DUE TO ACCELERATION

Tin Deposits in Alaska

The United States uses between 40 and 50 per cent of the world's production of tin, yet American manufacturers are almost wholly dependent upon foreign mines for their supply of raw material. Alaska may make up a very small part of this deficiency, according to a report on the "Tin Resources of Alaska" by Frank L. Hess, recently published by the United States Geological Survey.

Tin was first discovered in Alaska on Buhner creek, Seward peninsula, in 1900. The next year stream tin was found on Buck creek, which is separated from Buhner's creek by a low divide. In 1903 tin oxide was found on Cassiterite creek, a tributary of Lost river, 20 miles from Buck creek and about 100 miles northwest of Nome. Later discoveries of stream tin were made at several other places in the territory.

Of the tin placers none have shown much importance except those of Buck creek. In the gravel of the creek bed the content of stream tin carrying about 65 per cent metallic tin has been found to be as high as 400 pounds per cubic yard in rich spots, though the average is under 30 pounds. In figures furnished the Geological Survey, the gold in the gravels has been estimated at 40 cents per cubic yard, at $60 per ton of stream tin, and at other amounts. Nuggets of gold valued at $20 or more have been found. When compared with the Australian and Malayan gravels, where the "black tin" content is in many places from 1½ to 5 pounds per cubic yard, the gravels of Buck creek appear very rich, but the climate makes the conditions hard for placer working. The season is short, little or nothing can be done before June 15 and the freeze-up is apt to come by Sept. 15. There are many storms, with cold, heavy rains, but, on the other hand, the country is very healthful. A dredge working in this district last year from Sept. 10 to Oct. 15 saved 92 tons of stream tin averaging 66 per cent tin, or an equivalent of 101 tons carrying 60 per cent tin, and sold for $52,000.

Antimony a By-Product

Information received by the United States Geological Survey indicates that no antimony ore was produced in the United States in 1911, but considerable quantities of antimonial lead were made as a by-product in smelting the precious metals, and there was a large recovery of antimony from secondary sources, such as scrap bearing and type metals, antimonial lead, drosses, and solder. 14,078 tons of antimonial lead containing a total of 2,254 tons of antimony, valued at $386,786, was produced. The price of antimony was so low in 1911 that there was little encouragement for American miners to produce the ore unless it contained other valuable metals.

The production of secondary antimony as antimony in the United States last year was 10 short tons; and 2,359 tons was recovered in alloys. The output was valued at $359,040. In 1910 the recovery was 9 and 2,770 tons, respectively, valued at $444,600.

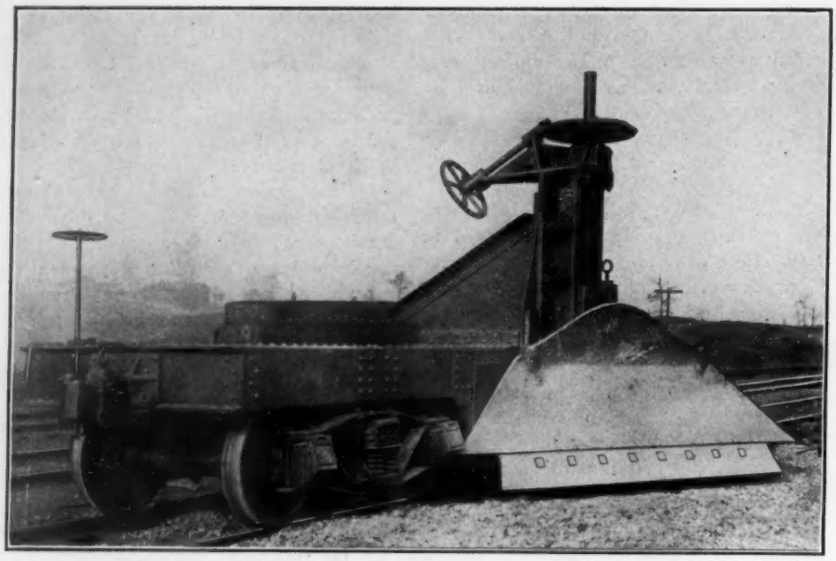


FIG. 1—CINDER LEVELING MACHINE

Cinder Leveling Machine

An exceedingly ingenious machine, operating on standard gage tracks and equipped with a powerful plow for leveling cinder or slag accumulations at the side of ladle tracks on iron and steel works slag dumps has been designed by Edwin J. Best and is manufactured by the Cleveland Machine & Mfg Co., Cleveland. In addition to slag and cinder, the machine can be employed for leveling other material such as sand, stone and gravel. The plow will level a cinder dump sufficiently low to permit of extending the tracks to a new location commanding the fill. The machine is illustrated in Fig. 1 and in Fig. 2 is shown a slag dump with accumulations at the side of the track which prevent the dumping of additional cinders into the fill until leveled to permit of relaying the track. The leveling of the dump is now accomplished largely by hand labor and the nature of the material is such that it cannot be removed readily. The slag, particularly in the summer months, remains in a heated condition for a long period, making it difficult for workmen to work on the dump. No hand labor is employed when the slag leveling machine is used. The trucks on which the plow is mounted are coupled to a locomotive and the dump is leveled for relaying the track, as shown in Fig. 3.

The car frame is of steel construction and is reinforced at the center opposite the point of attachment of the plow mechanism. The cutter wing is a steel casting and is attached to the side of the car from which it extends at an angle of about 30 degrees from the vertical. The wing is hinged on a pin in a slide casting which has four legs that fit between the same number of lugs on the wing.

The hinge allows the cutter to be set for both directions of car motion, by changing a brace from one side to the other. The brace is fastened to the cutter wing and slide on one side. This brace transmits the side thrusts to the car body and locks the wing in one position. The lengthwise thrust is transmitted to the car body by shoulders on the cutter wing. A guide casting bolted directly to the body of the car guides the slide vertically. This arrangement eliminates any shearing on the hinge pin and makes the entire construction rigid. Vertical adjustment of the plow can be obtained by the use of air, steam, water, electrical or hand power. On the machine illustrated, adjustment is made by using a screw and gear reduction hand wheel. The cutter blade is made of manganese steel and is fastened to the wing by bolts. The plow wing is reinforced by horizontal ribs which extend transversely across its rear face.

The car is of sufficient weight to hold it on the track, although in especially heavy work, a number of ingots can be used to give the car added weight. The body of the car is designed to withstand the most vigorous thrusts, all the strain of the machine being transmitted to the car body through the guide frame.

One of these slag levelers has been in use three years on a dump of one of the subsidiaries of the United States Steel Corporation, during which period its utility and rigid construction has been satisfactorily demonstrated. This machine will be built in several sizes by the Cleveland Machine & Mfg. Co.

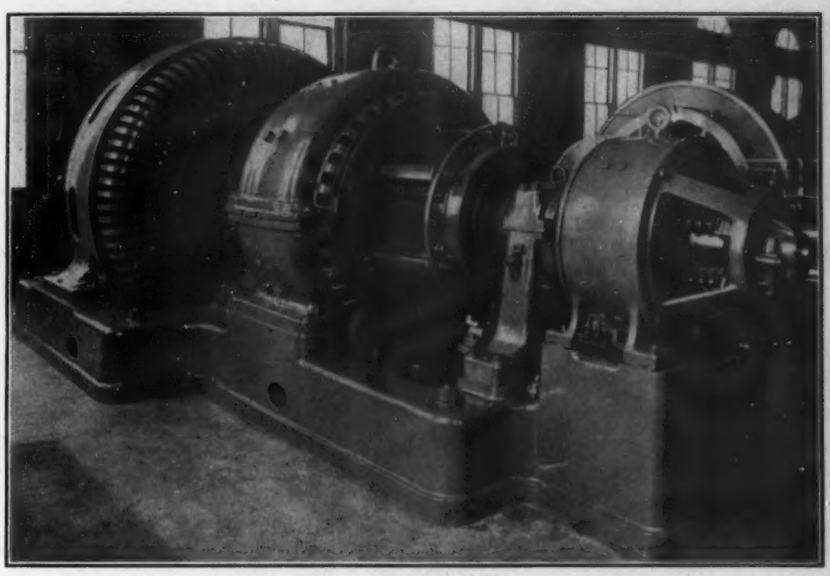
Pennsylvania's Coal Production in 1911

The production of bituminous coal in Pennsylvania in 1911 was 5,800,223 short tons less than it was in 1910, and this decrease represents almost exactly the decrease in the total production of coal for the United States. The decrease in Pennsylvania was, furthermore, almost entirely in that portion of the product used in the manufacture of coke. The final figures for Pennsylvania, as compiled by the United States Geological Survey, show that in 1911 Pennsylvania miners produced 144,721,303 short tons of bituminous coal with a spot value of $146,311,930. In addition to

FIG. 2—VIEW OF CINDER DUMP BEFORE USING THE CINDER LEVELER

this the anthracite miners produced 90,464,067 short tons of hard coal, valued at $174,952,415, the combined figures of production and value being respectively 235,185,370 short tons and $321,264,345.

Except as the depression in the iron trade affected the coking branch of the industry, the bituminous coal trade in Pennsylvania in 1911 was well-maintained and indicates that general industrial conditions were satisfactory. The number of men employed in the Pennsylvania coal mines in 1911 was 341,126, of which 168,541 were engaged in soft-coal mining. The bituminous miners worked an average of 233 days in the year and the average production for each miner was 859 tons. Most of the mines in the bituminous coal regions of the state are worked eight hours a day. Practically no time was lost by reason of strikes—less than 0.5 per cent of the time worked.



VIEW FROM THE EXCITER END OF SYNCHRONOUS MOTOR GENERATOR SET IN THE MILLS OF SPANG, CHALFANT & CO.

Synchronous Motor-Generators in Spang, Chalfant Mills

An interesting application of the synchronous motor-generator for power-factor correction is that of a 1,000 kilovolt-ampere set in the power house of Spang, Chalfant & Co., Pittsburgh, installed by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. There are two mills, the upper one being located near the power house, while the lower mill is about 4,500 feet distant. Under the conditions that obtained in the plant prior to the installation of the synchronous motor set the upper mill was operating at a power-factor of about 48 per cent. Another synchronous set previously installed takes care of the lower mill, originally at about as bad a power-factor, so that before the present set was installed, the generators at the power house were operating at a power factor of about 75 per cent. To carry the load at this low power-factor, it was necessary to operate four generating units in the power house, leaving no spare capacity.

The inherently lower power-factor conditions are due to the presence of a large number of induction motors which are underloaded for a considerable portion of the time. It was necessary to install motors of sufficiently high kilovolt-ampere rating to insure the torques demanded for handling the peak loads, and as the duty is intermittent, the motors run on partial loads for relatively long periods.

The synchronous motor-generator set was temporarily installed in its present location in the power house so as to raise the power-factor sufficiently to allow of always shutting down one or two of the four generating units. This renders available one or two spare units against contingencies. Moreover, the direct current generator of the synchronous motor set now carries the load of a former direct current engine type generator, which still further introduces economy into the plant operation. Ultimately the set will be installed in a central location in one of the mills at the delivering end of a set of feeders so as to provide maximum power-factor correction to transmission line and to generating equipment.

In operation, the synchronous motor of the set is over-excited and thereby the power-factor on the generators has been increased to from 97 to 100 per cent. Under existing conditions, the motor is usually operated at 20 per cent power-factor loading. At present the actual kilowatt load on the generator of the set is small, which, with full kilovolt-ampere in-put to the motor, accounts for the low loading power-factor. The set in its present location is on the bus-bars and, therefore, relieves the generators only. When the set is moved to its ultimate location in the upper mill it will be possible to utilize it still more advantageously, as a large amount of cable now required in the transmission of the extra current due to poor power-factor in the mill, will be available for carrying other useful loads.

The set is driven by a synchronous motor rated at 1,000 kilovolt-ampere,

FIG. 3—THE CINDER DUMP AFTER USING THE SLAG LEVELER

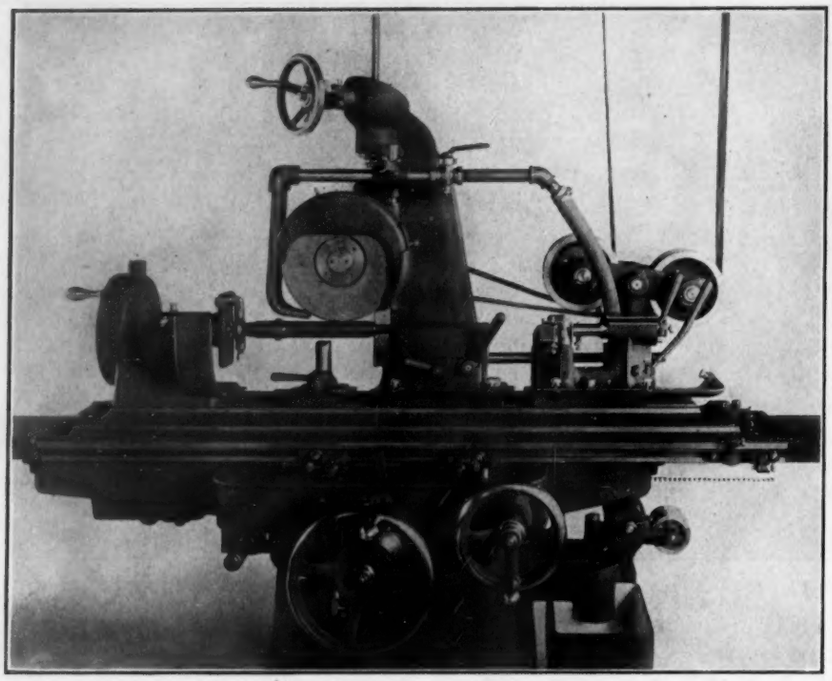


FIG. 1—PARTIAL FRONT VIEW OF GRINDER WITH WORK IN POSITION; THE WATER GUARDS HAVE BEEN REMOVED TO SHOW THE FIXTURES IN DETAIL

220 volts, three-phase, 30 cycles, 600 revolutions per minute. It is of the three-bearing design and has, for the synchronous motor, a direct-connected exciter overhung on the shaft, beyond the generator outboard bearing. A view of the set from the exciter end is shown in the accompanying illustration. The generator is a direct current, 400 kilowatt, 220-volt, compound wound machine.

Multiple Key Shaft Grinding Machine

A multiple key shaft grinding machine, built by the Bath Grinder Co., Fitchburg, Mass., is designed to grind simultaneously with a formed wheel, the side of two keys and the radius between an integral multiple key shaft, or sliding gear shaft for an automobile transmission case. As illustrated in Figs. 1 and 3, the vertical column is provided with two wide bearings to which the grinding wheel head is gibbed. The column is substantially ribbed internally and is firmly bolted to the top of the base of the machine. The wheel spindle is made of tool steel, hardened and ground, and operates in large adjustable phosphor bronze bearings, well protected from grit.

The hand wheel which feeds the grinding wheel vertically is graduated to read 0.00025 inch and is provided with a stop for duplicating work. The thrust of the screw is taken by a ball thrust bearing. A semi-automatic indexing work head is provided which is bolted to the table. The indexing mechanism consists of an index dial, a tooth ratchet wheel and an index plunger bolt which is released automatically by a slight backward movement of the handle and by a forward movement, the work is revolved and the plunger bolt is engaged in the next tapered notch. This mechanism is so designed that the dial cannot revolve backwards free of the plunger, which insures positive indexing action. The number of divisions on the dial are determined by the number of keys on the shaft to be ground.

The footstock is compact and rigid in construction, the center carrier being flat and is set into the base at an angle which brings the center within ½ inch of the top and ½ inch from the inner side of the footstock. This permits the grinding wheel to pass over or past the footstock without disturbing the setting of the wheel. The center carrier is operated by a spring controlled by a lever, shown at the right of the footstock, Fig. 1. The carrier may be locked in position firmly by the handle at the left of the footstock.

The wheel-trueing device, Fig. 2, is provided with three black diamonds, one of which is for forming the radius of the wheel and is operated by a short lever shown at the end of the fixture and the other two diamonds are for forming the sides of the wheel, being operated simultaneously by the long lever at the end of the fixture. The diamond for forming the radius is carried by a steel spindle revolving in tapered bearings. The alignment of the side forming diamonds is insured by adjustable tapered keys. When this device is locked back of the footstock, it should not be disturbed. When trueing the grinding wheel the table is moved so as to bring the center of the wheel over the center of the diamonds. The table is provided with a twin stop for locating the correct position. The master block for setting the diamonds is clamped on top of the wheel trueing device base,

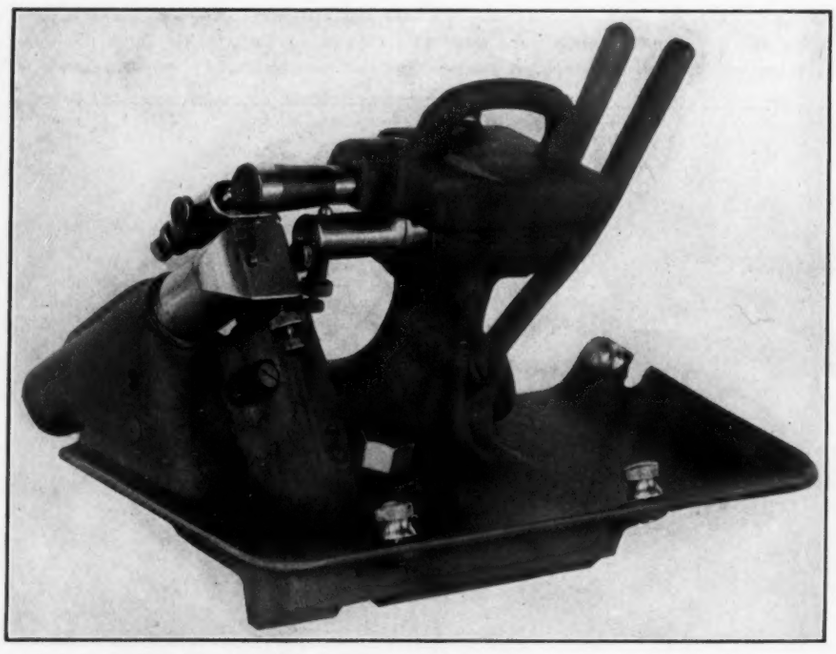


FIG. 2—WHEEL TRUEING DEVICE WITH MASTER BLOCK IN PLACE

which is provided with a suitable dovetail to insure alignment. The master block carries a hardened tool steel plug, to which the diamonds are set. A shield is furnished to cover the bearing on the wheel trueing device when the master block is not in use.

With the grinding machine is furnished a combination centering and rest base for rapidly centering work, which also acts as a support for slender work. This fixture is clamped to the table, being provided with a plunger, the top of which is formed to fit between two keys of the shaft to be ground. The plunger is actuated by a spring and is controlled by a lever which has a cam cast integral and engages the plunger. The table is controlled by adjustable dogs operating against the reversing lever, which actuates the clutch of the load or a hand reversing wheel can be used which provides means for automatically stopping the table at the end of its traverse. This is accomplished by slightly turning the lever at any time during the traverse of the table. All the levers, handles and adjustments are within easy reach of the operator. The water tank is entirely separate from the machine.

The Guerber Engineering Co., Bethlehem, Pa., some time ago added a one-story structure, 96 x 150 feet, to its plant and installed some new machinery. The company does general structural work and manufactures railroad frogs, switches, crossings, etc.

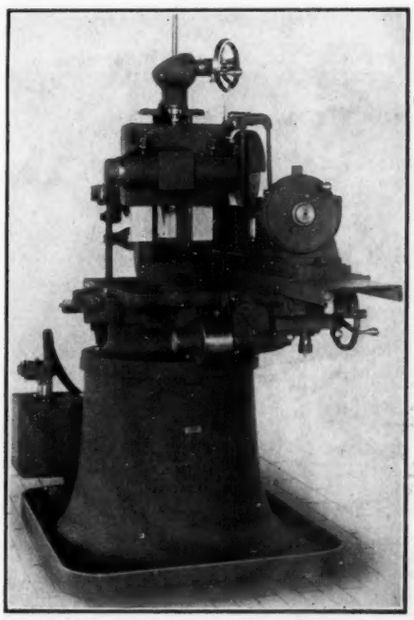


FIG. 3—SIDE VIEW OF GRINDING MACHINE

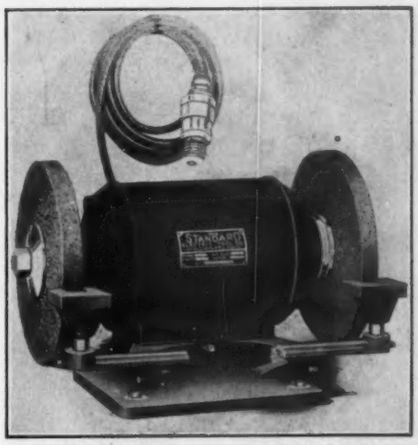


FIG. 1—PORTABLE ELECTRIC GRINDER

Portable Electric Drills and Grinders

The Standard Electric Tool Co., Cincinnati, has designed a new line of high power electric drills and grinders. The drills are ball-bearing throughout, the gears being made of chrome nickel steel, case-hardened, and are mounted on ball bearings packed in grease. The motors carry a strong series winding which gives them an excess of power over the rated capacity, thus preventing overloads and burnouts. The drills are built in ⅜ and ½ inch sizes for direct and alternating current. The ½ inch direct current drill will ream up to 7/16 inch. In addition, a universal drill of ⅜ inch capacity that will operate on both direct and alternating current, is made.

All armatures and poles in both drills and grinders are built of soft electrical sheet steel and are uniformly insulated. The grinders are made for tool post, bench and parallel work. A special feature in connection with the tool post of the center grinder is a base which converts it into a bench grinder, by removing the slide and placing the motor in a groove in the top of the base. This doubles the range of work and by this combination, they can be kept in constant service. All motors on both the drills and grinders are force ventilated by fans of special design. The portable electric drill as illustrated in Fig. 2, and the grinder in Fig. 1.

The Bethlehem Foundry & Machine Co., South Bethlehem, Pa., has completed a new two-story, pattern-storage, 40 x 152 feet, on some additional property recently acquired. It has also installed two new yard cranes. The company contemplates further enlargements, especially to its iron foundry, but nothing definite has been decided in regard to these plans.

Charcoal Iron Boiler Tubes

Interesting views of the various processes of charcoal iron boiler tube manufacture are included in a well-illustrated, 48-page booklet issued by the Parkesburg Iron Co., Parkesburg, Chester Co., Pa. The development of iron manufacture is discussed in narrative style and attention is directed to the fact that this company is the only one in existence today of the charcoal iron forges and plate mills of half a century ago which has preserved the old method of manufacture, operations being confined exclusively to the production of charcoal iron. The original mill of the Parkesburg Iron Co. consisted of 26 fires for sinking knobbled, hammered charcoal iron blooms, two bar mills for rolling the blooms into bars, and four mills for rolling the bars into skelp for tubes. The output of skelp from this mill prior to 1900 was purchased by different pipe manufacturers, and from the time of its organization to 1908, the National Tube Co. consumed the entire output of the Parkesburg mill, amounting to 20,000 tons annually. During the summer of 1908 a modern tube mill was erected by the Parkesburg Iron Co., which has a capacity of about 18,000 tons annually. The lap-weld mill, one of the most recent installed in the United States, is electrically-driven throughout.

The booklet contains standard specifications for charcoal iron, locomotive boiler tubes, as well as a list of standard sizes and weights of lap-weld boiler tubes, and tables showing the advisable and possible upsets for tubes.

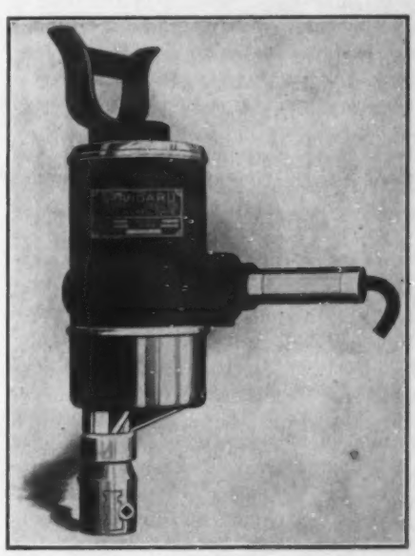


FIG. 2—PORTABLE ELECTRIC DRILL

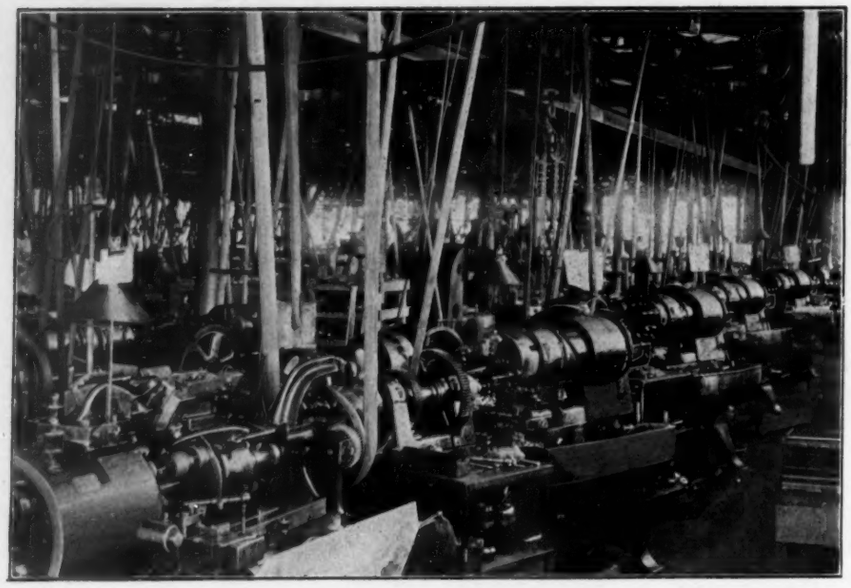


FIG. 1—AUTOMATIC MACHINE SECTION OF THE BOSTON GEAR WORKS

Plant of the Boston Gear Works

The plant of the Boston Gear Works, located at Norfolk Downs, six miles from Boston, is devoted exclusively to the manufacture of gears. The main building covers a floor area of 29,000 square feet and the floor space of the entire plant aggregates 37,000 square feet. The main building is divided into manufacturing and office sections by a fire wall, the former being 90 x 131 feet and the latter, 90 x 71 feet. In the office section are located the pattern shop, two gear stock rooms, tool and shipping rooms and the offices of the company executives. In the basement underneath the offices are located the storage, millwright and experimental rooms. A part of the basement also is occupied by the steam heating plant and a 50 horsepower oil engine. In the basement of the main building are installed a 50 horsepower oil engine, pumps, generators, etc., several cutting-off machines and steel racks. In a separate power plant, 31 x 32 feet, an 85 horsepower oil engine has been installed.

The main factory is divided into 14 departments, each in charge of a working foreman. The entire gear cutting equipment consists of 225 machines of which 75 are of the automatic type. The small gear department contains 40 turning and gear cutting machines, 10 of which are of the automatic type. Most of these machines were designed and built by the Boston Gear Works.

In another department are located seven Cleveland automatic turning machines which handle bar stock up to 6 inches in size and four automatic screw machines. In one section have been installed three Potter & Johnson automatic chucking machines, one plain chucking machine and five lathes. The other departments contain the following equipment: Six bevel gear generators and three single tool planers which have a capacity for work up to 48 inches; nine automatic milling machines for cutting spurs, sprockets and bevel gears of small diameter, 12 spiral machines for cutting spiral and worm gears of medium diameter; seven machines for cutting spur, helical and worm gears up to 10 feet in diameter; six gear shapers, one rack cutter, seven automatic spur and sprocket gear cutters and one automatic gear cutter, for making gears up to 74 inches in diameter. The lathe, drill and miscellaneous tool department contains 22 machines. In the tool section there are 12 machines and the grinding department is equipped with nine universal, plain and internal grinding machines.

The case-hardening plant is 26 x 45 feet and is equipped with two coal-fired carbonizing furnaces, two fuel oil furnaces and lead reheating and oil tempering furnaces. Machines are provided in the inspection department for testing gears under actual operating conditions, precision measuring tools, drop hammer machine and a scleroscope for heat-treated gears.

The Boston Gear Works manufactures all kinds of steel gears, in-worm gear combinations. Preparatransmission gears, and fan, cam, timer and pump gears for engines. Recently the company developed a number of worm and helical gear cutting machines for manufacturing special worm wear combinations. Preparations also are being made to manufacture worm gears for automobile rear axle drives, both the straight and Hindley types.

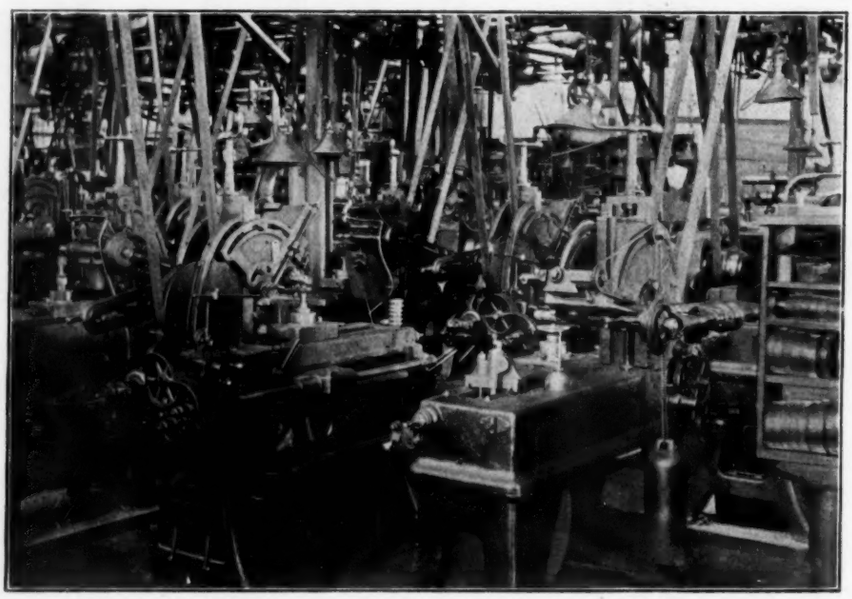


FIG. 2—AUTOMATIC MILLING MACHINE SECTION OF THE BOSTON GEAR WORKS

Capital Increase Covers Improvements

The Follansbee Bros. Co., Pittsburgh, has filed a notice of an increase in capital stock from $1,000,000 to $2,000,000. The officials of the company state that the increase will not involve a further enlargement of the plant but covers the improvements that have already been made and are now under way. They state that the additional capital will only represent actual investment.

Northern Iron Co.'s Port Henry Blast Furnace

The Lining Will Be of the Combination Type Including the So-Called Thin Lining and that of the Thickness Generally Installed

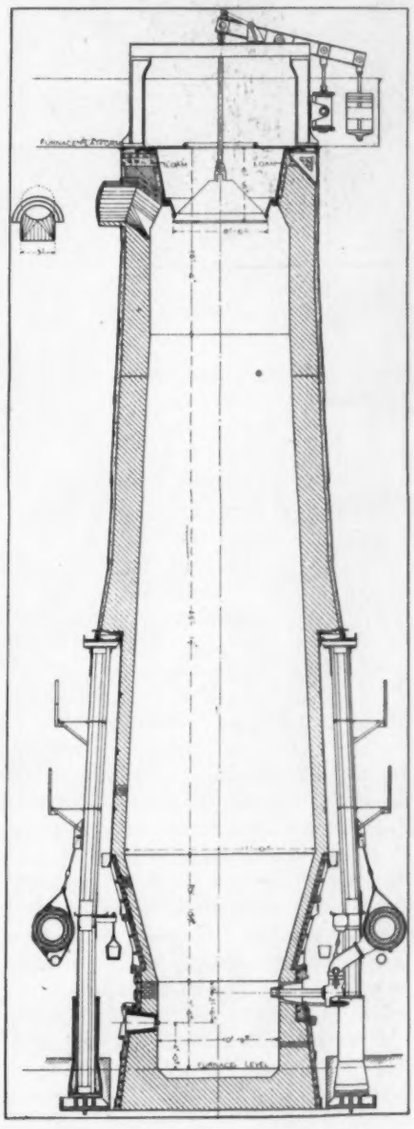
The type of lining for the new blast furnace of the Northern Iron Co. Port Henry, N. Y., marks an interesting departure in blast furnace construction. The lining essentially is a combination of the so-called thin lining, which extends a height of 18 feet, 6 inches above the bosh line, and above this point to the top of the stack the lining is of the ordinary type. As shown in the accompanying illustration, this furnace is 80 feet high and has a bosh diameter of 17 feet. This combination lining is not an experiment, as its advantages have been demonstrated in two furnaces constructed along similar lines, one at Port Henry, which is being replaced by the furnace which is the subject of this article, and a stack at Standish, N. Y. The new furnace replaces an old stack which had been remodeled to embody as far as possible the features of construction which are being more fully carried out in the new stack. The existing stove equipment will be utilized for the operation of this furnace.

The theory upon which this type of lining construction is based is that it is more advantageous to use a thin lining for the *working* portion of the furnace and the thick lining for the upper portion of the stack where the stock is in course of preparation. It is, of course, desirable for reasons of economy, to retain heat within the furnace, and it is not unreasonable to question the value of carrying the thin lining and water-cooling as high as the stock line.

Furnace Columns

The furnace columns are wrought steel and are enclosed up to the tuyere level with cast iron casings filled with concrete. The top of each column carries a steel slab which, in turn, supports the mantel. From the mantel upward a wrought steel shell is provided from which the hopper is supported by brackets. The shell enclosing the thin portion of the inwall is made of steel riveted to the mantel and extends downward to a point slightly below the bosh line. At this point a water trough is riveted to the shell. The bosh, tuyere and hearth jackets are constructed of heavy cast iron sections which contain extra heavy coil pipes. These various sections are secured in position by heavy links and bands. No connection is provided between the furnace shell at the top of the bosh level, provision being made by caulking strips for a tight, sliding fit. The furnace is equipped with 12 tuyeres and one cinder notch and the platforms supported by the furnace columns provide access to the shell below the mantel.

No water-cooling is provided above



VERTICAL SECTION OF NEW PORT HENRY BLAST FURNACE

the mantel, but to protect the inside of the mantel, cast iron water-cooled plates have been installed. Between the mantel and the top of the bosh jacket, the furnace is cooled by water sprays. The bosh jacket is made in 18 sections, each having a separate water connection to its coils. This arrangement has been provided to control the accumulation of dirt and kish on the bosh walls and has proven very effective. To ascertain at what points of the bosh there is an unusually large accumulation of dirt and kish, the water supply at a certain section is restricted. If the discharged water does not increase in temperature rapidly, it indicates that the bosh wall opposite this section is covered with an accumulation of dirt and kish. The continued restriction or the closing-off of the water supply entirely to this section will soon result in the scouring and cleansing of the bosh wall. The tuyere and hearth jackets are cooled by the circulation of water through the coil pipes. The downcomer is connected to the furnace top by four equally-spaced branches, each branch being well above the stock line. The stack is being built under the supervision of Frank C. Roberts & Co., Philadelphia, and will be completed and placed in operation late this year.

Turbine Blowing Unit

The blast for the new furnace will be furnished by a turbine blowing unit of the General Electric type which had served the old stack. This unit consists of a 1,500 kilowatt turbine connected with a six-stage centrifugal compressor. It has a maximum capacity of 26,000 cubic feet at 25 pounds pressure. This turbine blower was in continuous operation from Aug. 4, 1911, until June 9, 1912, as there was no occasion to shut it down in this period. The operations of the furnace during this interval were not interrupted except to change a tuyere. During this period of operation the turbine was slowed down to 500 revolutions per minute although the average operating speed of the unit is about 1,600 revolutions per minute.

The plant also is equipped with two of the old type, I. P. Morris steam engines. One of these has a steam cylinder, 60 inches in diameter; air cylinder, 100 inches in diameter, and 96-inch stroke, It is of the walking beam type and operates at a speed of 12½ revolutions per minute. The second engine has a steam cylinder, 54 inches in diameter; air cylinder, 96 inches in diameter and 84-inch stroke. In the boiler plant one 300-horsepower Rust boiler will be installed

and with the present equipment, the boiler house will contain three Rust boilers of 300 horsepower each, two Cook boilers of 250 horsepower each and one Wheeler boiler of 250 horsepower capacity. There are two stoves of the McClure central combustion type, 95 feet high and 20 feet in diameter, and three Roberts stoves, 81 feet high. The ore used in the operation of the furnace is made up of 100 per cent of magnetic concentrates furnished from the operations of Witherbee, Sherman & Co., at Mineville, seven miles from Port Henry. These concentrates show an average iron content of 64.5 per cent. The flux used is 50 per cent waste marble and 50 per cent dolomite which is quarried about a mile from the furnace. Both marble and dolomite are crushed.

Automatic Saw Sharpening Machine

An automatic saw sharpening machine, designed to sharpen high or low carbon solid or inserted tooth saw blades is being built by the Newton Machine Tool Works, Inc., Philadelphia. It has been the practice to remove the teeth from the blade body when sharpening inserted tooth saw blades to permit of grinding the contour of the tooth. It has been found, however, that the effective cutting part of the teeth is rapidly reduced in section, and in addition considerable itme is required to set the teeth in the blades and to adjust them to the proper height to insure each tooth taking its proportionate depth of cut.

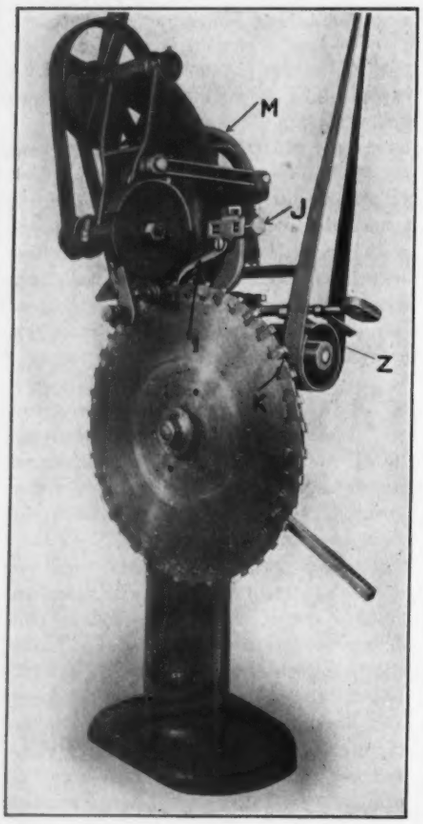


FIG. 1—MACHINE SET FOR SHARPENING INSERTED SAW TOOTH BLADES

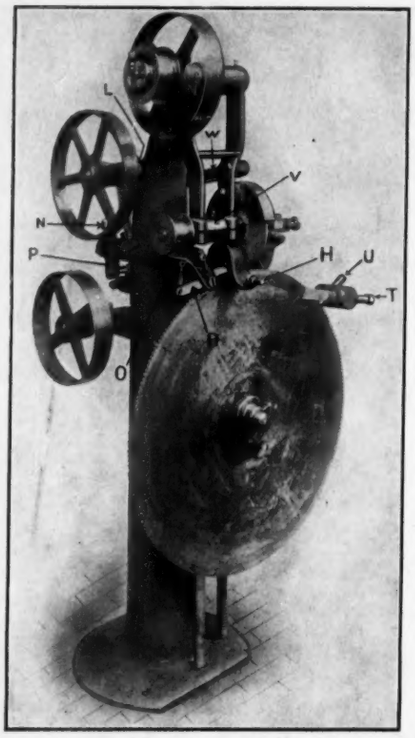


FIG. 2—MACHINE SET FOR SHARPENING SOLID TOOTH SAW BLADES

When preparing to sharpen an inserted tooth blade on this saw sharpening machine, the teeth are first placed in the blade and are properly set by a gage on the spindle flange, after which the wedges are driven tight. The blade is next removed to the grinder and is placed on the arbor as shown in Fig. 1. The blade then is elevated between the guides, *H*, Fig 2, which are adjustable to accommodate blades of different widths. The pawl, Fig. 1, is placed in front of the teeth and the thumb screw, *J*, is adjusted to keep the teeth in position for the proper depth of cut. The teeth are ground on the face, *K*, and not on the contour. As teeth of various pitch must be sharpened, the rotating pawl, *I*, Fig. 1, has an adjustable stroke which is obtained as follows: On the side of the pulley, *M*, Fig. 1, and at *L*, Fig. 2, is located a segment having an inclined face. The roller, *N*, on the rock arm, *O*, engages this inclined face and the time of movement is controlled by the adjustable screw, *P*, Fig. 2. As the angle of the inclined face is constant, the time of engagement always bears the same proportion to the length of movement of the arm, *O*, to which the rotation pawl, *R*, is attached. To maintain the proper pitch a friction clamp is provided to hold the successive teeth firmly against the pawl, *I*, Fig. 1, the tension being maintained by a screw, *T*, Fig. 2. At *U* a second index stop is provided to insure the proper division on solid tooth blades with missing teeth. When grinding solid tooth blades, as illustrated in Fig. 2, the spindle arm, *V*, is swung automatically by the connecting arm, *W*, and when grinding inserted tooth saw blades the connecting arm is disconnected and the spindle arm is moved back and forth by hand.

Saw blades require a particular rake and clearance for materials of varying composition and to permit of obtaining this the arbor is mounted on a bracket which can be swiveled to bring the center of the blade three or four inches out of center with the wheel, thereby giving a positive or a negative rake to the teeth. When desired these machines are arranged for motor drive, as illustrated in Fig. 3. When belt-driven no countershaft is required as a tight and loose pulley and shifting lever are located on the machine at *Z*, Fig. 1. This machine will sharpen any type of circular saw blade, from 12 to 40 inches in diameter.

The Kelly Reamer Co., Cleveland, recently has installed in the Cleveland plant of the Liggett Spring & Axle Co. an auto-hub outfit. This reaming and boring machine performs ten operations at two chuckings, thereby increasing the former output approximately 400 per cent. A recent change in the Kelly reamer permits of the quick exchange from the boring reamer body to the floating reamer.

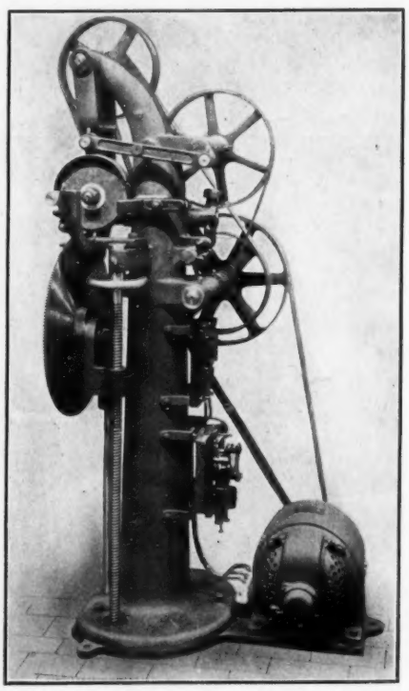


FIG. 3 — MOTOR-DRIVEN AUTOMATIC SAW SHARPENING MACHINE

A Large Toggle Drawing Press

One of the largest toggle type drawing presses yet constructed was recently built by the E. W. Bliss Co., Brooklyn. The press is adapted for drawing and forming sheet metal automobile parts made of heavy stock, including brake drums, rear axle housings, etc. The press also can be used for other lines of manufacture in which very heavy material is drawn.

A front view of the machine is illustrated in Fig. 1 and a rear view is shown in Fig. 2. The press is of the built-up type of construction in which the bed, the crown piece and uprights are made separately and are bound together by four 7-inch steel tie rods. These rods take all the working strain and are shrunk in place. The frame

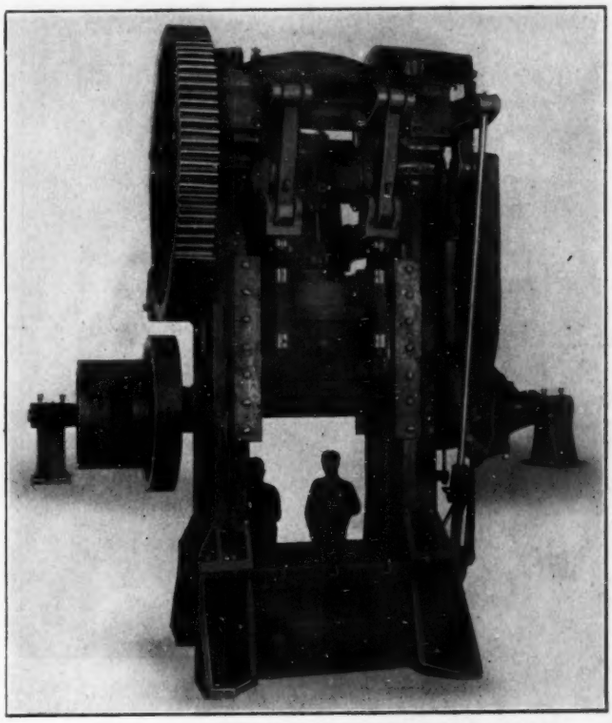


FIG. 1—FRONT VIEW OF LARGE DRAWING PRESS

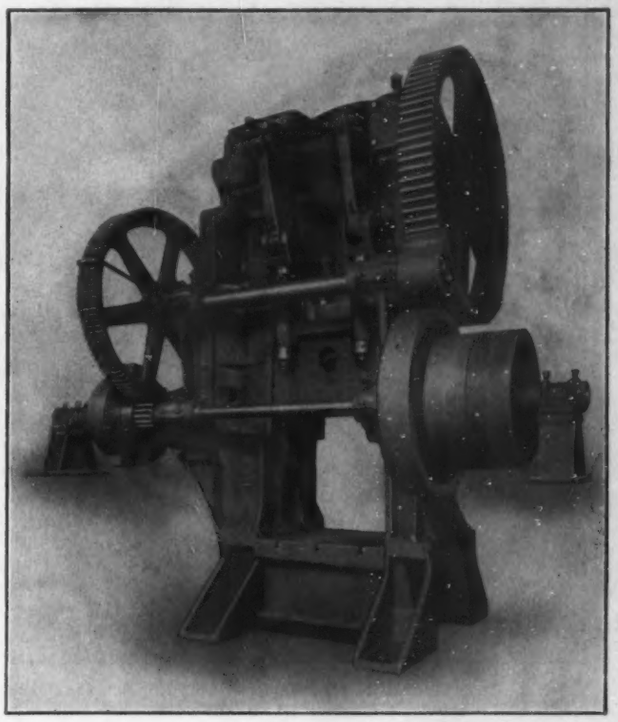


FIG. 2—REAR VIEW OF DRAWING PRESS

columns are of the box type and ample cross-section. The main crank shaft is 12 inches in diameter and has a stroke of 24 inches. The stroke of the blank holder slide is 16 inches.

The entire construction of the machine is in proportion to the 12-inch crank shaft and the 7-inch tie rods, and is figured on the basis of bending strength with a factor of safety of 2½:1. The safe working capacity of the machine is 600 tons. If the capacity of the press were figured on the usual method of obtaining the shearing strain, this would be 1,000 instead of 600 tons, but on the other hand, to have a capacity of 1,000 tons pressure, figured on bending strength, 9-inch tie rods and a 16-inch crank shaft would be required.

The Bliss toggle movement is applied to the press and all pressure on the blank is transferred through straightened toggles directly to the frame, thereby relieving the bearings from all friction and wear due to the blank holding, with a consequent reduction in power consumption.

The press is double-geared and is controlled by a powerful hand-actuated friction clutch of the double grip type. This clutch, in connection with the semi-automatic brakes, places the movements of the press under the control of the operator entirely, and it may be started or stopped at any point of the stroke. The bottoms of the outboard bearing standards are located considerably above the base of the press. Owing to the low ceiling in the buildings in which this press was installed the bearings were arranged in this way as a part of the press was placed in a pit of considerable depth. The machine weighs 170,000 pounds.

No Bismuth Mined

So far as known to the United States Geological Survey the only bismuth-bearing ore produced in this country during 1911 was in La Plata county, Colo., which carried 6 to 8 per cent of bismuth. This ore, however, was sold for its gold and silver content. Another lot of still richer ore was mined from a claim about 35 miles southwest of Tularosa, New Mexico. The imports in 1911 amounted to 172,093 pounds, valued at $311,771.

Thin-Lined Blast Furnaces

The development of the thin-lined, water-cooled type of blast furnace construction is traced in a 24-page booklet issued by Arthur G. McKee, engineer, Rockefeller building, Cleveland.

It is stated that the first thin-lined installation is generally accredited to Burgers, who constructed a furnace at the Gelsenkerchen Works in Germany in 1898 with a shell consisting of tapered cast iron cylinders bolted together, the complete shell being externally water-cooled. Under the direction of James Scott, the first installation in this country of a thin-lined furnace stack was made in 1908 at the Isabella furnaces of the Carnegie Steel Co., Pittsburgh. In this installation the cooling was effected by means of troughs or buckets riveted externally to a steel plate shell, columns being provided for the independent support of the furnace top structure, platform, downcomers, bleeders, etc. The Illinois Steel Co., in 1909, constructed a thin-lined furnace with a shell made of steel castings similar in many respects to the German practice. Cooling was effected by three circular spray pipes which extended entirely around the stack and were located so as to insure a continuous flow of water over the entire shell. The Tennessee Coal, Iron & Railroad Co. in 1911 placed in operation a thin-lined furnace with a steel plate shell with riveted points and circular spray pipes for cooling, some-

what similar to the cooling method adopted by the Illinois Steel Co.

Mr. McKee states that while installations of furnaces of the thin-lined type have been made in this country at a number of plants other than those mentioned, the stacks referred to embody the following three general types of construction: Sectional cast iron or steel shell with either spray or trough cooling; steel plate shell with cooling by means of water troughs or buckets and the steel plate shell with spray cooling.

The advantages of the thin lining and water cooling in blast furnace construction and operation are referred to at length and the thin-lined blast furnace installation of the Detroit Iron & Steel Co. described in THE IRON TRADE REVIEW of April 18, 1912, furnishes the main feature of the booklet.

A Heavy Duty, High Speed Cutting-Off Machine

The 16-inch heavy duty high speed cutting off machine, built by the George Gorton Machine Co., Racine, Wis., is designed for cutting 6-inch cold rolled steel bars in 30 seconds and 12-inch bars in 60 seconds. The cutter blade with its drum is driven by a spur gear and the entire line of drive from the motor to the cutters is spur gear operated. A front view of this machine with a bar in place on the stop trolley is shown in Fig. 1. Fig. 2 is a rear view, and Fig. 3 is a front view with the drum raised for access to the cutters. The feed is by means of a worm and a segment of a worm gear and with this arrangement a leverage of 2:1 is attained over the cutters. When operating at its maximum capacity, there is absolutely no chatter or vibration in any portion of the machine.

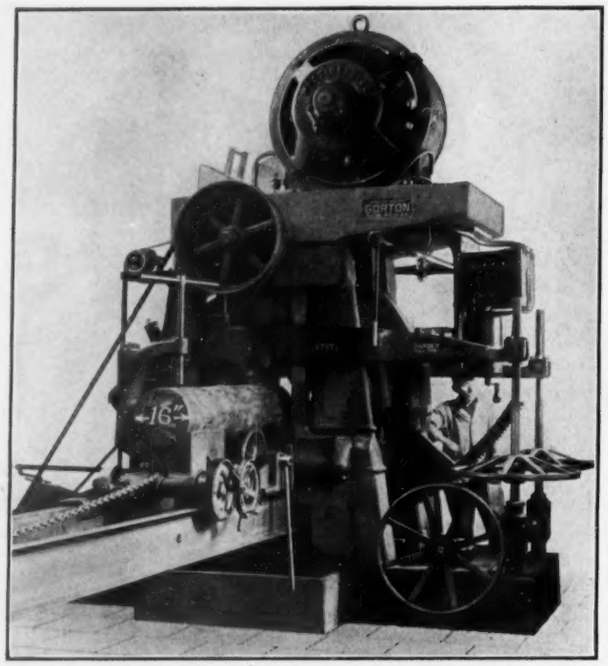


FIG. 1—FRONT VIEW OF HEAVY DUTY CUTTING-OFF MACHINE

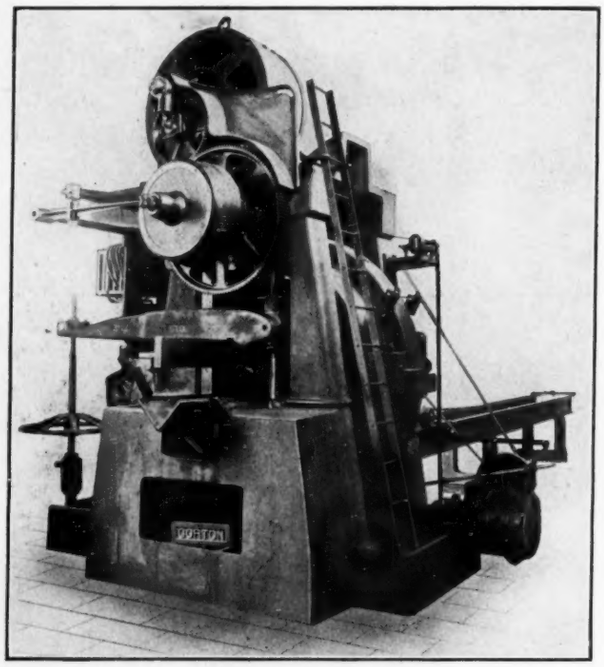


FIG. 2—REAR VIEW OF HEAVY DUTY CUTTING-OFF MACHINE

The oiling features have been given special consideration. The saw drum bearings operate in a flood of oil and the machine is so constructed that chips or dirt cannot enter the bearings. The main driving gear has a pitch diameter of 72 inches with a face of 4½ inches, and this meshes with the main driving pinion, which has a pitch drive of 5 inches. The outside clutch gear, shown in Fig. 2, has a pitch diameter of 36 inches and is driven direct from the motor with an intermediate gear.

The machine is driven by a 40-horsepower variable speed motor operating at 300 to 900 revolutions per minute, affording a cutter travel of from 17 to 51 feet per minute. These speeds are adapted to extremely hard and medium soft steel stock. The cutter blade is ¾-inch thick and the cutter is 20 inches from point to point. The cutters and blade are so constructed that the cutter may be broken without injury to the blade. However, to avoid such accidental breakage, the main clutch is provided with a shearing pin which releases the driving mechanism when subjected to stresses exceeding the capacity of the machine. This pin is so located that it is subjected only to the momentum of the main driving pinion shaft and when the pin is sheared all parts of large diameter are disconnected and continue to revolve until the motor is shut down. This avoids any flywheel effect which would have a tendency to continue the rotation of the cutters.

The stock is fed through the machine continuously by the carriage illustrated in Figs. 1 and 3. The stock may be measured accurately by means of a measuring bolt, and the stock severed is forced out on a V-block at the rear of the machine, as shown in Fig. 2. The clamping arrangements may be operated by hand, compressed air, or hydraulic pressure. For flooding the cutters, a lubricating pump is provided and a cone pulley insures seven different feed speeds. The base of the machine is a single

Belgian Iron Ore Imports and Exports

Belgian iron ore imports showed an increase of 329,863 tons for the first five months of 1912, as compared with the corresponding period of 1911. The imports totaled 2,589,158 tons, against 2,259,295 tons during the first five months last year. During the same period the exports of iron ore exceeded those of the previous year by 55,198 tons; these amounted to 267,492 tons in 1912 and 212,294 tons in the same period of 1911.

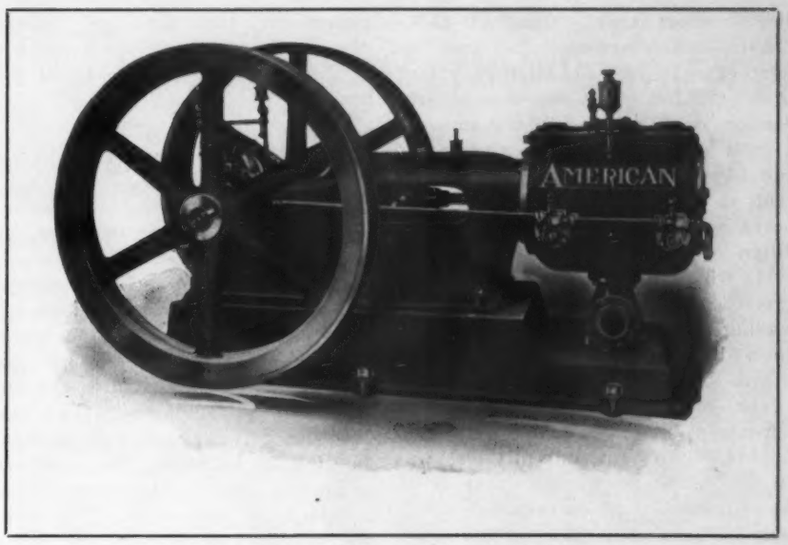
casting weighing 14,000 pounds and forms a large pan into which the chips fall and in which the cutter lubricant is contained. The machine occupies a floor area of 7 feet by 9 feet 6 inches, is 12 feet high, and weighs, exclusive of the stock rack, 55,000 pounds.

Fuel Oil Supplants Coal in Washington and Oregon

The production of coal in Washington in 1911 was 3,572,815 short tons, valued at $8,174,170, according to the final returns compiled by the United States Geological Survey, in co-operation with the State Geological Survey of Washington.

Washington is the only one of the Pacific coast states in which coal mining is an industry of any importance. But Washington, although more remote, is like Oregon in that it is now feeling the influence of the competition of California fuel oil. Even the railroads having their own coal mines are using fuel oil in their locomotives on the mountain divisions, where a sparkless fuel gives protection against forest fires. Some of the Washington coal mines are within less than 50 miles of Puget Sound, yet most of the steamers plying in those waters are using oil for fuel, the saving in labor and the cleanliness of the liquid fuel giving it a decided advantage over coal, even when the latter may be cheaper at first cost. The decreased production of coal in Washington seems to be assignable to no other cause than the substitution of oil for coal, as trade conditions generally in 1911 were satisfactory. This decrease was 339,084 tons, or 8.67 per cent, from the production of 1910. The value decreased $1,509,295, or 16.29 per cent.

The number of men employed in the coal mines of Washington in 1911 was 6,498, who worked an average of 225 days, against 6,314, for 256 days in 1910. At eight of the mines in the state washing plants have been installed, and 392,502 short tons of coal were washed in 1911, some of the washed coal being used in the manufacture of coke. The cleaned coke amounted to 338,707 short tons, and the refuse to 53,794 tons.



NEW AMERICAN AIR COMPRESSOR

A New Line of Air Compressors

A new line of crank and flywheel air compressors, shown in the accompanying illustration, is now being manufactured by the American Steam Pump Co., Battle Creek, Mich. The compressors are equipped with Corliss inlet valves. The valves open and close without impact and are free from hammering. They are so designed that they insure a cylinder full of free air at each stroke of the piston even at a moderate speed. The valves are so placed that they may be removed easily for inspection by removing the bonnet and without disturbing the valve gear. These compressors will be built in both the steam and power driven types in single and two-stage patterns and in capacities ranging from 150 to 650 cubic feet of free air per minute.

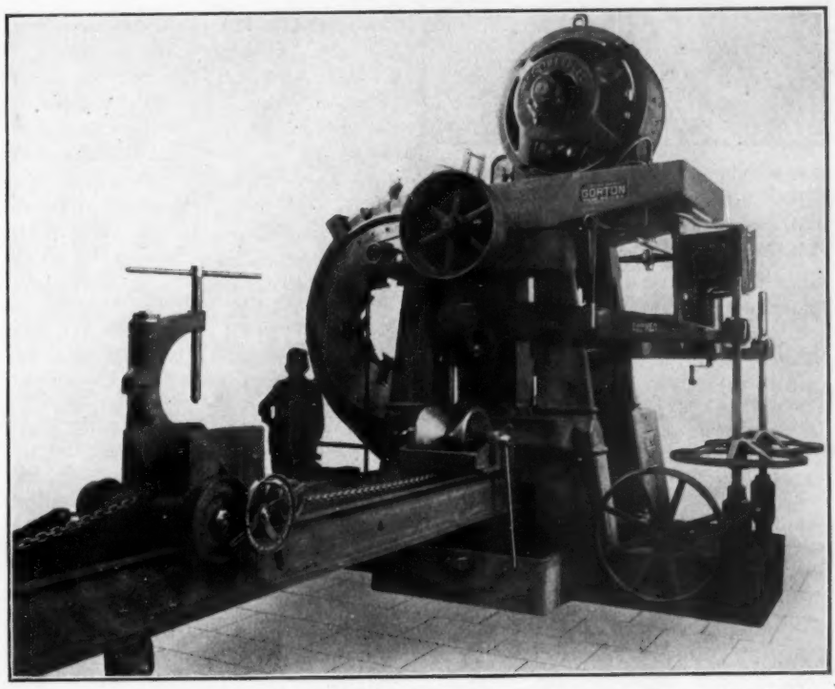


FIG. 3—FRONT VIEW OF HEAVY DUTY CUTTING-OFF MACHINE SHOWING DRUM RAISED FOR ACCESS TO THE CUTTERS

Coal Production of the United States in 1911

The United States has become a half billion ton coal country. During the last two years the total production has averaged just a trifle short of the 500,000,000 mark, exceeding that figure in 1910, and almost reaching it in 1911. It is considered probable that in the future it will be a bad year whose production falls far short of this quantity. The final figures of production have been compiled by Edward W. Parker, the government coal statistician and are discussed by him in a statement issued by the United States Geological Survey. They show a total production in 1911 of 496,188,308 short tons, valued at the mines at $625,910,113. Of this production Pennsylvania anthracite amounted to 90,-

464,067 short tons, valued at $174,952,415, and bituminous coal and lignite aggregated 405,724,241 tons, valued at $450,957,698. The decrease in production in 1911 was 5,408,070 tons, or a little over 1 per cent, in quantity, and $3,646,908, or a little over 0.5 per cent, in value. The decrease is attributed wholly to the depressed condition of the iron and steel trade in 1911, which was reflected in the decreased production of coke. The three leading coke-producing states alone showed an aggregate decrease of nearly 9,000,000 short tons of coal.

The decrease in the production of bituminous coal compared with 1910 was 11,386,901 tons, but this loss was largely made up by the increase in the production of anthracite, which was 5,978,831 short tons greater than in 1910.

Considering the marked decrease in the production and consumption of coke and the fact that large quantities of coal in addition to that used for coke making are consumed in the iron trade, the comparatively small net decrease of less than 6,000,000 tons in coal production must be taken as an indication that other manufacturing industries, the transportation companies, and the country generally were prosperous. The average price for bituminous coal was 1 cent a ton lower in 1911 than in 1910 and that of anthracite was 3 cents higher.

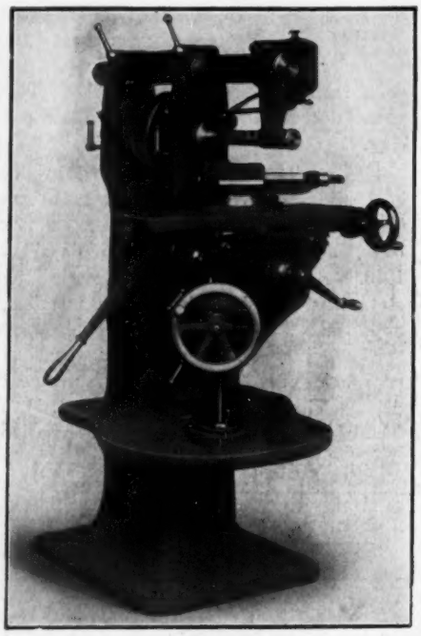
The total number of men employed in the coal mines of the United States in 1911 was 722,322, of which 172,585 worked in the anthracite mines of Pennsylvania. The average number of days worked in the anthracite mines was 246 and in the other mines 211. The average production per man was 3½ tons a day in the bituminous and lignite mines and 2.13 tons a day in the anthracite. The time lost by strikes in 1911 was insignificant.

The Spanish Iron Industry

The imports of iron and steel into Spain during the first four months of 1912, compared with those of the same period of 1911, are as follows: Pig iron, 2,449 tons, against 2,208 tons; castings, 1,513 tons, against 1,761 tons; bars, shapes, plates, etc., 14,883 tons, against 9,077 tons, and tin plate, 678 tons, against 385 tons. During the same period of 1912 there were exported 2,882,106 tons of iron ore, 10,563 tons of manganese ore, 20,062 tons of pig iron and 382 tons of manufactured iron and steel. Compared with the same period of the preceding year, the exportation of iron ore decreased 96,380 tons; manganese ore, 1,010 tons and manufactured iron and steel, 159 tons, while pig iron made an increase of 3,175 tons.

A New Hand Milling Machine

In the accompanying illustration is shown a hand milling machine, built by the John Steptoe Shaper Co., Cincinnati. The table can be operated either by a lever or screw feed. The lever feed can be used by the operator for the rapid milling of small parts and when occasion requires the screw feed can be employed. The screw feed has a collar accurately graduated in 0.001 of an inch. The vise has a graduated base which permits it to be adjusted to any angle. The pan at the bottom prevents chips and oil from falling onto the floor and also



STEPTOE HAND MILLING MACHINE

will be found convenient as a tool rest. Felt oilers are used and are tapered and threaded on the ends to take up wear. A machine of this type will be built by the John Steptoe Shaper Co., provided with a power feed to the table.

French Fuel Imports and Exports

During the first four months of 1912, the imports of coal into France from Great Britain declined 916,000 tons as compared with the corresponding period of 1911. The total imports were 4,459,900 tons, against 5,562,300 tons in the previous year. The imports of coke from various countries also showed a considerable decrease. The exports of these fuels from France showed a material increase in the tonnage of coal, a decrease in coke and a very heavy increase in briquetted fuels.

Heavy Losses in Norwegian Iron Mines

After an expenditure of $2,575,000, it appears highly probable that the Salangen iron mines in Norway will prove a failure. These mines are located on the Salangen fiord, south of Tromso, and comprise large quantities of ore of a rather poor quality, the iron content being about 30 per cent. The mines were first exploited by a Swedish company which, after considerable development work, sold them in 1906 to two German firms, the Oberschlesische Eisenbedarfs, and the Donnersmarckhutte, for about $41,500. One of the purchasing companies owned 70 per cent of the stock, and the other 30 per cent. It was the intention of these firms to work the mines on a large scale, and preparations were made to that end. The Grondal process was adopted for the separation of the ore, which was magnetic and was briquetted. Unfortunately it was found that the briquettes cost too much to transport to Silesia as was the original intention, therefore, they had to be shipped to England. At the end of 1911 the Oberschlesische company had expended $1,800,000, and the Donnersmarkhutte, $775,000 and it is very doubtful whether the capital expended will yield a return. The question of abandoning the mines has been carefully considered. The Donnersmarckhutte has already written off its share of $775,000, and the Oberschlesische will be soon obliged to do the same, as the content of iron in the ore has declined to 16 per cent. Before the mines are abandoned, however, they will be subjected to a close and thorough examination to discover whether any better grade ore exists in deposits that have not been worked.

How to Paint Patterns

At a joint meeting of the Steel Founders' Society and the American Society for Testing Materials, the subject of coloring patterns for steel castings was discussed and a uniform system was adopted. The finished surface is to be painted red, the rough surface yellow and all core prints are to be painted black. The Treadwell Engineering Co., Easton, Pa., is sending to the trade a card containing a pattern in colors which clearly shows the scheme adopted by these two organizations.

The International Testing Material Congress

Program of the New York Meeting in September—Foreign Governments and Associations Will Be Well-Represented

Final preparations for the sixth congress of the International Association for Testing Materials have been made and on Monday, Sept. 2, the headquarters in the Engineering Societies building, 29 West Thirty-ninth street, New York City, will be opened for the registration of members, delegates, etc. In the evening an informal reception will be held under the joint auspices of the American Society for Testing Materials, the American Institute of Electrical Engineers, the American Society of Mechanical Engineers and the American Institute of Mining Engineers.

The Program

On Tuesday morning the congress will convene at 10 o'clock and an address of welcome will be delivered by Capt. R. W. Hunt, president of the American Society for Testing Materials, and by national, state and municipal officials. In the afternoon the section sessions will convene and will continue until 5 p. m. In the evening the city officials will tender the delegates a reception in the Public Library building. Following the morning session on Wednesday, the afternoon and early evening will be occupied by an excursion to West Point. On Thursday, section sessions will be held both morning and afternoon, and in the evening a reception will be tendered to the foreign members of the American Society of Civil Engineers, in its building at 220 West Fifty-seventh street. On Friday, section sessions will be held in the morning and early afternoon and provisions have been made for an evening excursion down the harbor. The sixth congress will conclude with a general meeting on Saturday morning at which the various sections will report. In the afternoon the Museum of Natural History will receive members of the Congress for Testing Materials and of Applied Chemistry, and in the evening the members of the two congresses will be received by the Museum of Art.

During the congress ample opportunity will be afforded the visitors to see the points of interest in New York and vicinity and special entertainment has been arranged for the ladies in attendance. Local societies of foreigners have extended invitations to the delegates of their respective countries.

Special Excursion

An excursion on a special hotel train, on which the party will live during the trip, has been arranged, leaving New York City on Sunday afternoon and arriving in Washington in the evening. A sufficient stay will be made in that city to permit of visiting the government buildings and special facilities will be afforded for inspecting the bureau of standards and the testing laboratories of the army and navy. From Washington, the party will proceed to Pittsburgh, where the chamber of commerce has prepared a two days' program of visits to the large steel, electric, cement and glass establishments, and the United States bureau of mines will give a special demonstration of explosives. The excursion then will be continued to Buffalo and Niagara Falls, where the local committee has prepared another two days' visit to the special industries operated by the water power of the falls. From Niagara Falls, the party will return to New York. The cost of the excursion, including all necessary expenses, will be $50.

The attendance of members and delegates from foreign countries already promises to be unusually large. Foreign governments are manifesting great interest in the proceedings of the congress and delegates have been appointed by the various countries as follows: Belgium, 2; China, 1; Denmark, 1; France, 4; Germany, 10; Great Britain, 3; Holland, 1; Hungary, 4; Norway, 2; Russia, 6; Servia, 1; Spain, 3; Sweden, 2, and Switzerland, 1.

Delegates from foreign countries appointed by societies, universities and business and industrial organizations who will attend the congress follow: Australia, 1; Austria, 12; Belgium, 1; Denmark, 16; France, 3; Germany, 18; Great Britain, 22; Holland, 7; Hungary, 17; Italy, 6; Norway, 3; Russia, 19; Spain, 2, and Switzerland, 7.

Practically all of the American technical societies have appointed delegates and these, together with the members, foreshadow a very large attendance. Approximately 170 foreign and about 35 American papers will be presented. To insure a complete discussion of the papers and reports, the committee in charge of the congress urges, that so far as possible, the discussions be prepared in advance and submitted in writing and these will have precedence over impromptu discussions.

Among the American papers to be presented are the following:

Paints for Metallic Structures, by A. S. Cushman.
Tests of Structures. by J. E. Howard.
Testing Rails for Elongation and Ductility of the Metal Under the Manufacturers' Standard Drop Testing Machine, by P. H. Dudley.
American Research Work Concerning Steel Rails Being Conducted Jointly by the Railroads and the Steel Manufacturers, by M. H. Wickhorst.
Typical Uses of Cast Iron in American Practice, by J. J. Porter.
Notes on Features Associated with the Tests of Steel Rails, by J. E. Howard.
Tests for Concrete, by C. M. Chapman.
The Consideration of the Magnetic and Electric Properties of Materials in Connection with Their Mechanical Testing, by C. W. Burrows.
The Physical Significance of the Elastic Limit, by H. F. Moore.
Note on the Crystalline Growth of Ferrite Below Its Thermal Critical Range, by Albert Sauveur.
Electrolytic Action in Unreinforced Concrete, by Cyril de Wyrall.
The Relation of the Tensile Strength of Steel to Magnetic and Other Hardness Tests, by R. P. Devries.
The Design, Equipment and Operation of University Testing Laboratories, by F. P. McKibben.
Investigations Made Upon Fire Resisting Construction in the United States, by I. H. Woolson and R. P. Miller.
Commercial Tendencies in Malleable Iron Practice by Richard Moldenke.
The Effect of High Temperatures on the Physical Properties of Some Alloys, by I. M. Bregowsky and L. W. Spring.
Standard Magnifications for Micrographs, by M. T. Lathrop and C. R. Bulley.
The Solid Non-Metallic Impurities in Steel, by H. D. Hibbard.
Insuring Soundness in Steel Rails, by R. W. Hunt.

The American Society for Testing Materials has issued a list of standard specifications which have been adopted by this organization since its formation. The total at present is 52, which represents an increase of 13 in a year. This is the largest annual increase in the history of the society and is significant of the activity of its technical committees. A. N. Talbot has been appointed second vice president and Charles S. Churchill to membership on the executive committee. The executive committee has further filled two other vacancies in its membership, occasioned by the election of Robert W. Hunt to the presidency, and the resignation of William R. Webster, C. E. Skinner and G. W. Thompson being the new executive committee members.

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Uncontrolled Competition

In editorials published in our issues of May 9 and June 6, we referred to the two articles published in *World's Work*, on "The New Competition", by Arthur J. Eddy. In the *World's Work* for July, Mr. Eddy publishes a third article, in which he advocates segregation as opposed to dissolution of the trusts. He says that segregation means simply such an isolation of all the parts as will enable competitors and all the public to see clearly what each part is doing without destroying the ties that bind the parts into one whole. Under such a segregation, a trust or large corporation remains intact, but in the operations of its different companies or branches and in producing or selling its different lines of products it is required to keep its accounts and make its reports in such a manner that each will stand by itself and be subject to easy investigation and ready comparison. Mr. Eddy says that segregation is entirely a matter of accounting and management and does not necessarily affect ownership.

It strikes us that the word "segregation" as used by Mr. Eddy is practically synonymous with "publicity" and to reasonable publicity no one is opposed now-a-days, with the exception of a few ultra conservatives who are opposed to all changes. Mr. Eddy offers nothing strikingly new in this article, but his explanations of the old cut-throat competition, which still exist to some extent today, are interesting. In a conversation with a prominent lawyer, representing a large company, the unfortunate position in which an independent fabricator sometimes finds himself is discussed when the questioner shows the lawyer that a steel company having its own mines, furnaces, rolling mills and fabricating company can do fabricated work at less than cost to beat independent fabricators that have no connection with mills. The reply of the lawyer is that that is competition, and the sort of competition the public is crying for. "If the people want cut-throat competition, the company that has no mill back of it is going to get hurt."

We agree with Mr. Eddy that this is competition, but it is not the competition that fair-minded people will favor when they get over the idea that is prevalent to a large extent that if we can only have competition, conditions will be vastly improved. Uncontrolled competition is as bad as uncontrolled monopoly.

Doctors Disagree

Almost daily, the newspapers have published versions of the various reports and recommendations which, it is rumored, are to be made by different members of the Stanley committee as a result of its investigation of the United States Steel Corporation. At the present time, nothing seems to be settled definitely except that there are wide disagreements among members of the committee. There is no sound reason why the members should divide along political lines, but owing to the usual custom of committees disagreeing when there is any chance to make political capital, two reports were expected. It has been understood for some time that more than two reports would be made and the latest advices are that the number will be five. Neither Democrats nor Republicans are able to agree among themselves. What little weight recommendations of the committee might have had, if there had been substantial agreement among its members, will be greatly detracted from by the dissensions which have arisen.

Up to the present time, THE IRON TRADE REVIEW has refrained from publishing any of the various versions of different reports which have been made public, but when these reports are formally signed and presented by the members of the committee to the house of representatives, they will be given as much space as they deserve in these columns.

Contracts for Steel Products

In the past few years a great deal has been said about "contractual obligations" in the steel trade. On the whole, the discussion has been along the general line of urging that contracts should be more seriously regarded. Comparison has been made with conditions abroad in steel, and conditions both at home and abroad in other commodities, the comparison showing very forcibly that something is wrong with the contract practice in the American steel trade. The most common conclusion drawn has been that there should be a much more rigid enforcement of contracts in the American steel trade.

The citation of practices in the steel trade abroad, while illuminating in one respect, has perhaps tended in another respect to becloud the issue and actually to retard the movement toward reform. There is an important difference between conditions in the United States and conditions in foreign countries, and that is that we usually have a quickly fluctuating market in steel products here, while abroad the fluctuations are slower and do not go to as great extremes. Furthermore, it is the custom abroad to enter into long engagements of various sorts, long credits, long period of employment, and so on. It is natural, when this spirit permeates business abroad, that relatively long contracts should be made for the sale of steel products. The citation of practices abroad may have made us feel that long contracts are reasonable, but this does

not follow. If similar conditions obtained abroad as obtain in the United States, contracts would not be entered into for such long periods, and because they are more or less common abroad is no reason why they should be tolerated in the United States, with its very different conditions.

In other words, it would be well to consider whether steps for the enforcement of contractual obligations, instead of simply taking the form of trying to enforce contracts of the nature and period now common, should not rather take the form of greatly abridging the duration of contracts. Such a step would at once greatly simplify the problem of enforcing the contracts. The duration of contracts, and the disposition of prices and other conditions in the American steel trade to change, are not in harmony with each other. In determining for how long a period a contract should be written, the likelihood of conditions to change should be given great consideration. Except in special circumstances, no contract should be written for a period so long that there is any reasonable likelihood of conditions undergoing a material change before it expires. If this principle were adopted in the making of contracts, the greater part of the difficulty now experienced in enforcing them would be completely removed.

It must be recognized, of course, that in certain cases there is good reason for contracts being made for a relatively long period. There are few, if any, of such cases which do not come under the head of the buyer having committed himself, or being about to commit himself, for the sale of that which he will make from the steel purchased. For instance, a contractor undertakes to erect a building or bridge, the size of the job being such that it will necessarily require months or years for completion. It would be unreasonable for him to buy the material and carry it until needed, yet he must make a flat price at the time. It is fair that the mill should sell him the material, but only the precise material, which he will need for the structure, and deliver it to him as it is required. As another instance, certain products are sold in seasons, agricultural implements and automobiles, for example. The manufacturer must make his season price in advance and in such a case he has good ground for asking that the producer of his raw materials shall protect him.

These are cases in which it is reasonable for steel products to be sold under contract at a flat price for an extended delivery, but they stand out as clearly distinguished from other cases in which steel products are sold, and the fact that they are so clearly distinguished shows that the other cases have not these arguments, if they have any, for being recognized. Contracts of this sort have been holding the umbrella for the other cases. A practice is established of making these contracts in the case of consumers who must make a flat price for a structure, or for a season's output, and other contracts of somewhat similar duration have been made, when the circumstances were altogether different. Sellers and buyers have not sufficiently differentiated. Many, of course, do, but the difference is not sufficiently emphasized, or considered in the conduct of the steel business.

The case of the jobber, for instance, is totally different, and yet jobbers are frequently given contracts for relatively long periods of time. In recent years the tendency has been to cut down the periods, and very satisfactory results have followed this curtailment.

In all the discussion regarding the enforcement of steel contracts, the first point which should be considered is whether it is necessary to make the contracts at all. Shortening the time is the quickest and simplest way of relieving the situation. If contracts are once restricted to the periods which they should naturally cover, the further difficulties in the general problem of enforcement can be more clearly discerned and more readily met.

Activity in Three Great Commodities

It is interesting to compare the activity, year by year, in three great commodities, iron, coal and petroleum. Production has been as follows, the coal and petroleum figures for 1911 having just been made public:

	PIG IRON. GROSS TONS.	COAL. NET TONS.	PETROLEUM. BARRELS.
1905	22,992,380	392,722,635	134,717,580
1906	25,307,191	414,157,278	126,493,936
1907	25,781,361	480,363,424	166,095,335
1908	15,936,018	415,842,698	178,527,355
1909	25,795,471	460,814,616	183,170,874
1910	27,303,567	501,596,378	209,556,048
1911	23,649,344	496,188,308	220,449,391

It will be observed at once that the production of oil has increased much more rapidly than the production of coal. Averaging 1905 and 1906 and 1910 and 1911, to eliminate some of the minor fluctuations, coal production has increased 24 per cent, while oil production has increased 66 per cent. This was to be expected. Coal as a fuel has long been used. There are no "new uses" for coal, whereas with petroleum there are. For a long time it was used for little but illuminating purposes; today it is being used largely as fuel and its use for this purpose is increasing rapidly. Averaging the two together, we have an increase, from 1905-6 to 1910-11, of 40 or 45 per cent.

In pig iron we see no such increase. Averaging the years in the same manner, we have only 4 per cent increase in pig iron when fuel increased ten times as great a percentage. It is reasonable to conclude that the use of fuel is a fair measure of the industrial activity of the country, and this is certainly the case with pig iron, with certain provisos. Coal and oil are used steadily, while iron and steel have their ups and downs. They are largely employed for great structures, the erection of which may be active in one year and light in another. Also, iron and steel commodities are used for replacement purposes, and according to business conditions there may be much replacement in one year, while in another year conditions and prospects are such as to move men to wait and get along for a time with the old facilities.

Thus it is natural that from year to year, or from one group of years to another, there will be wide fluctuations in iron production, sharp gains sometimes, and fairly sharp recessions at others. In the long run, however, the figures can reasonably be expected to average up. It is perfectly patent from the showing in the above table that in the past seven years the movement in pig iron has not averaged up with the movement in coal and petroleum, and there is a fair basis for inferring that in very recent years pig iron has lagged behind the proper pace, or the average it will show over a long period of years. If such is the case, we may expect that in the next few years gains will be made in order to restore the average. Of course, a vast multitude of factors enter into the problem, but the comparison of pig iron with coal and oil is certainly worth the little trouble it involves.

MEN OF THE IRON TRADE

W. E. Corey will sail for the United States from Europe on Aug. 10.

Charles E. Adams, president of the Cleveland Hardware Co., Cleveland, has returned from Europe.

John R. Russell, treasurer of the Great Lakes Engineering Works, Detroit, who has been in Europe, has returned.

R. C. Mann of the Cleveland-Cliffs Iron Co., Cleveland, is spending his annual vacation in the Marquette range district.

W. C. Runyon, president of the Struthers Furnace Co., of Cleveland, has arrived at Bremen, Germany, and for two months will motor through Europe.

E. N. Breitung, Marquette, Mich., sailed July 31, on the Kaiser Wilhelm der Grosse for France, where he will join his family at their villa near Versailles.

George W. Good has been appointed master mechanic for all the operations of the Philadelphia & Reading Coal & Iron Co., with headquarters at Pottsville, Pa.

J. Weir Zimmerman, stock and inventory clerk at the Steelton, Pa., plant of the Pennsylvania Steel Co., has gone to the Sparrows Point works as special auditor.

Robert R. Keith, formerly with the Sterling Machine Co., Norwich, Conn., has accepted the position of assistant superintendent of the Sheffield Car Co., Three Rivers, Mich.

R. K. Cheney, formerly connected with the Jones & Laughlin Steel Co., Pittsburgh, has accepted the position of superintendent with the Sweets Steel Co., Williamsport, Pa.

O. O. Hewitt, secretary of the Niles Forge & Mfg. Co., Niles, O., has resigned to become assistant manager of the Caldwell Mining Car & Foundry Co., Caldwell, O.

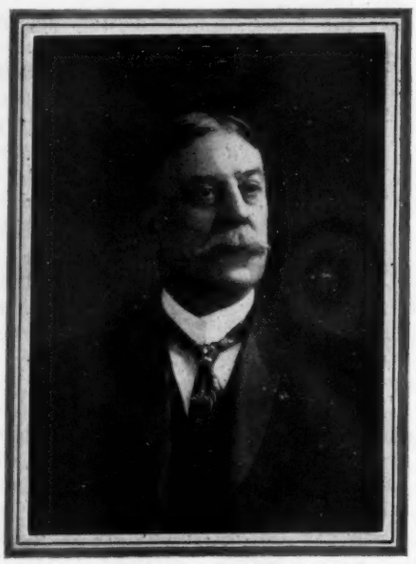
J. Frank Ritter has been appointed acting superintendent of erection at the Steelton, Pa., works of the Pennsylvania Steel Co., to succeed Frederick C. Cohen, who has resigned.

L. V. Blue, of the Wheeling Mold & Foundry Co., Wheeling, W. Va., is president of the newly organized Kennerdell Silica Sand Co., Pittsburgh. The company has purchased 66 acres of land at Kennerdell, Pa., on the Allegheny division of the Pennsylvania railroad. Contracts for equipment with a capacity of 200 tons a day have been placed and the plant will be put in operation this month.

W. J. Price, associated with the Fargo Plumbing & Heating Co., Fargo, N. D., has been elected vice president and treasurer of the Consolidated Engineering Co., Chicago.

W. Scott Thomas is manager of the Providence, R. I., office of the J. W. Paxson Co., Philadelphia, manufacturer of foundry supplies and equipment. The offices are at 741 Grosvenor building.

A. E. Donville, formerly connected with the Nevius Castings Co., Real Estate Trust building, Philadelphia, is now with the American Car & Foundry Co., with offices at Detroit, Mich.



EUGENE L. ZIMMERMAN

Captain William Goodman has been appointed underground superintendent of the mines of the Breitung estate. He has been mining captain at the Mary Charlotte mine for several years.

Frederick Baldt Jr., who has been associated with the Nelson Valve Works, Wynmoor, Pa., has accepted the superintendency of the plant of the Keystone Steel Castings Co., Chester, Pa.

E. J. Hayman, formerly at the general offices of the Parkersburg Iron & Steel Co., Parkersburg, W. Va., is now sales agent with headquarters at 1311 Third National Bank building, St. Louis, Mo.

James Milne, manager of the Ontario Salt Works, Windsor, has been appointed electrical and mechanical engineer of the city of Toronto, a newly created position at a salary of $5,000 per annum.

E. J. Best, who has been chief engineer of the Tennessee Coal, Iron & Railroad Co., at Ensley, Ala., is now vice president of the Cleveland Machine & Mfg. Co., 4944 Hamilton avenue, Cleveland.

Cecil Grenfell, a prominent figure in financing the Southern Iron & Steel Co., has resigned as chairman of the board of directors of that company, according to advices from Birmingham, Ala.

C. B. McElhany, formerly assistant manager of sales in charge of wire of the Cambria Steel Co., Johnstown, Pa., has been appointed general manager of sales of the wire department, with Edward Price Jr. as his assistant.

G. H. Charls, assistant sales manager of the American Rolling Mill Co., Middletown, O., is in the east for the purpose of establishing an eastern agency. This step is necessitated by the increased demand in the east for products of this company.

Daniel Agnew, for the past eight years with the Minneapolis Steel & Machinery Co., Minneapolis, has resigned as contracting agent in charge of its city sales office in order to accept a position with the Trussed Concrete Steel Co., Detroit.

F. A. Farrar, of Brainerd, Minn., is president of the newly organized Brainerd-Cuyuna Mining Co., formed to explore lands on the Cuyuna range. Henry Nelson, of Duluth, is vice president, and Edmond Ingalls, Duluth, is secretary and treasurer.

D. W. Bliem, who has been assistant to the eastern division operating manager of the American Bridge Co., with headquarters in New York, has been made general manager of the National Bridge Co. of Canada, Ltd., Montreal, succeeding J. L. Brower, resigned.

C. I. Starrett, purchasing agent of the Republic Iron & Steel Co. at Youngstown, is making a trip through the Chicago district. Mr. Starrett will

MEN OF THE IRON TRADE

inspect some of the western plants of the Republic company and will go to Moline, where new construction is under way.

W. B. Pattison has been appointed superintendent of the mines of the Breitung estate on the Marquette range, succeeding Capt. Joseph Hodgson, who resigned to accept a position in Arizona. Mr. Pattison has been connected with the Breitung interests for the past year, previous to which time he was at the Empire mine at Palmer. He is a graduate of the Michigan College of Mines.

William H. Stewart has been elected president and chairman of the board of directors of the Brownell Boiler Co., Dayton, O. He succeeds A. H. Kemper. Other officers elected were first vice president and general manager, F. K. Runyan; second vice president and works manager, W. P. Smith; secretary and general sales manager, I. E. Jones; treasurer and office manager, L. C. Alcoke; assistant secretary, A. E. Hartnett.

Captain Samuel Jewell has been named as assistant to the superintendent of the Breitung estate mines on the Marquette range. He has been connected with the Oliver Iron Mining Co. as mining superintendent for several years. He was in the employ of that company for 23 years, beginning as a miner and timberman. He will have the general supervision of all underground work at the several Breitung mines.

F. G. S. Ham, of London, Eng., a member of the party of British manufacturers which recently made a tour through Canada, has made a tentative agreement with the city of Port Arthur, Ont., to establish a plant there for general engineering work and the manufacture of valves, hydrants and water pipes. The plant would cost $100,000 and would employ 250 men. The agreement provides for a free site and a nominal assessment for a number of years.

Charles H. Brandt has been elected president of the National Iron & Wire Co., Cleveland, to succeed the late W. F. Billenstein, who was killed a few weeks ago in an automobile accident. Mr. Brandt was formerly vice president of the company. James Craig, who has been the company's superintendent, was elected vice president and general manager. L. C. Schendel continues as secretary and treasurer. Mr. Brandt is a director of the Cleveland Builders' Exchange.

James A. Campbell, C. D. Hine, H. G. Dalton, J. L. Severance, Henry Wick, E. L. Ford, H. H. Stambaugh, J. G. Butler Jr., William Wilkoff, Richard Garlick and Robert Bentley were elected directors of the Youngstown Sheet & Tube Co., Youngstown, O., at the recent meeting of the stockholders. All were re-elected with the exception of Henry Wick, who succeeds Col. George D. Wick, a victim of the Titanic disaster. The board will probably not organize for several weeks.

W. J. Olcott, president of the Oliver Iron Mining Co., Duluth., is in charge of arranging for the visit to the Mesabi range of 70 members and guests of the American Geographical Society this month. The party comprises a number of distinguished scientists from 16 different countries, Russia, Servia, Spain, Sweden, Norway, Switzerland, Germany, Austria, Denmark, Belgium, France, England, Portugal, Hungary, Italy and the Netherlands. The tour is in celebration of the sixtieth anniversary of the American Geographical Society.

Eugene L. Zimmerman, of Cincinnati, recently elected president of the Wellston Steel & Iron Co., Wellston, O., has purchased from the receiver the real and personal property of the Superior Coal Co., Jackson, O., for $170,000. A new company known as the Superior Colliery Co., has been formed to take over the property, the capital being from New York. Operations will probably begin at the several mines in the near future. The property was formerly controlled by the late M. L. Sternberger, of Jackson, O., whom Mr. Zimmerman succeeded as president of the Wellston Steel & Iron Co.

President A. W. Thompson, of the Inland Steel Co., Chicago, is optimistic regarding business prospects. He is quoted as saying that "the Inland Steel Co. is operating to capacity and has sufficient business on the books to insure steady operation for the rest of the year. The crop outlook could not be better, and from present indications we are going to have a long period of prosperity, with a record volume of steel business on advancing prices. In my opinion 1912 and 1913 will be big years for the steel industry, and this prosperity may extend well into 1914. Conservative business men and bankers are all hoping that there will be no foolish legislation created that would tend to interrupt the progress commerce and industry are now making."

Frank Samuel, of Philadelphia, iron and steel merchant and importer, has returned from a business trip to England with some interesting comments upon the need of a merchant marine in this country. He believes that the United States has now an opportunity of capturing the leading position in the world's trade if some wisdom is displayed toward furnishing decent shipping laws. "I found during my visit abroad," said Mr. Samuel, "that all trade conditions in the United Kingdom are exceptionally favorable. While politics has been a very disturbing element over there for the last two years, it does not seem to have retarded business conditions. The iron and steel industry there has never been in a better condition than at the present time. All the mills are so fully employed that they cannot take any new business for prompt delivery. The ship building industry on the Clyde, and in other parts of England and Ireland, is employed for two years to come. Prices on all iron and steel commodities, with hardly an exception, are much higher than in this country; in fact, there has been a large tonnage placed in this country for all kinds of ship building material, strips for pipe making, billets and other material, and it is a complaint among the makers of steel that, due to the high prices prevailing today in England, they are losing their export business to American manufacturers. All we want in this country are decent shipping laws so that we may have as good facilities for export shipments to all parts of the world, as have both England and Germany. If we had this in a short time we would far exceed any other country in the amount of business we were doing."

HEAVY PRODUCTION

Of Pig Iron During the First Half of the Year—New Furnaces.

The American Iron and Steel Association has received from the manufacturers complete statistics for the production of pig iron in the United States in the first half of 1912. Detailed statistics will be found on another page.

Total Production

The production of all kinds of pig iron in the first half of 1912, including spiegeleisen, ferro-manganese, ferro-silicon, ferro-phosphorus, ferro-titanium, ferro-vanadium, etc., amounted to 14,072,274 gross tons, against 11,982,551 tons in the last half of 1911 and 11,666,996 tons in the first half. The following table gives the half-yearly production since 1909.

GROSS TONS.

	First half.	Second half.	Total.
1909.....	11,022,346	14,773,125	25,795,471
1910.....	14,978,738	12,324,829	27,303,567
1911.....	11,666,996	11,982,551	23,649,547
1912.....	14,072,274	.....	.....

Furnaces in Blast

The whole number of furnaces in blast on June 30, 1912, was 266, against 231 on Dec. 31, 1911, and 212 on June 30, 1911. The number of furnaces idle, including furnaces being rebuilt, on June 30, 1912, was 200, against 235 on Dec. 31, 1911, and 201 on June 30, 1911.

During the first six months of 1912 the number of furnaces actually in blast during a part or the whole of the time was 302, against 275 in the last half of 1911 and 297 in the first half of that year.

Furnaces Building

On June 30, 1912, there were seven entirely new furnaces in course of construction, six of which will use mineral fuel and one will use charcoal, as follows: Pennsylvania, 2; Virginia, 1; Ohio, 1; Michigan, 1; and Minnesota, 2. In addition one coke furnace in Virginia was partly erected, but work has been suspended for several years.

Furnaces Rebuilding

On June 30, 1912, five old furnaces were being rebuilt, all mineral fuel, as follows: New York, 1; New Jersey, 1; Alabama, 2; and Ohio, 1.

New Furnaces

During the first six months of 1912 eight entirely new furnaces were completed, namely, two in New York, three in Pennsylvania, one in Indiana and two in Illinois. All are coke furnaces. Their total annual capacity amounts to 1,039,500 tons. Down to June 30, five of these furnaces had been blown in.

Furnaces Abandoned

In the first half of 1912 there were seven furnaces abandoned, namely: Two furnaces of the Poughkeepsie Iron Co., at Poughkeepsie, N. Y.; Hackettstown furnace of the Carteret Steel Co., at Hackettstown, N. J.; two Henry Clay furnaces of the Empire Steel & Iron Co., at Reading, Pa.; and two furnaces of the Susquehanna Iron Co., one at Wrightsville and the other at Watts, Pa. These furnaces had an annual capacity of 215,000 tons. Six used anthracite coal and coke and one used coke.

THREE COMPANIES

In the Hanging Rock District Have Been Consolidated.

The merger of the Marting Iron & Steel Co. and the Ironton Iron Co., both of Ironton, O., and the Lawrence Iron Co., Culbertson, O., was announced last week. The Marting company has filed notice of an increase in capital stock from $200,000 to $2,000,000 and the new company will be known as the Marting Iron & Steel Co. The three companies taken over are in the Hanging Rock district.

The stockholders of each of the companies agreed upon the values of the three furnaces taken in by the new company. These values will exceed three-fourths of the capital stock. The balance of the stock will be disposed of by the directors, who have not been elected.

The president and general manager of the new company will be Col. H. A. Marting, president of the former Marting Iron & Steel Co. He is heavily interested financially in all three of the furnaces. Plans under consideration provide for the improving of the Lawrence furnace and enlarging it to a 200-ton daily capacity. It is also the intention of the new company to open large ore deposits in Michigan and to build a by-product coke plant at either Ironton or Portsmouth, O.

The reason generally assigned for the merger is that a more economical handling of the plants can be accomplished under one head. The furnaces will continue to produce the same kind of iron as formerly, according to present plans.

SHEET MILLS

Will be Erected by the Northern Steel Co. at Welland, Ont.

Toronto, July 29.—The Northern Steel Co., Ltd., with a capital of $1,200,000, will erect rolling mills and other buildings in Welland. Ont., for the manufacture of sheets and black plate. The main building will be 600 x 150 feet, and 85 feet in height and equipped with a 10-ton crane. Construction will begin at once with the object of opening the plant in February. Five hundred men will be employed, who will work night and day in 8-hour shifts. The company has secured a 15-acre site in the southeastern part of the town.

The Canadian government has placed an order for 50,000 tons of steel rails for the Intercolonial Railway with the Dominion Steel Corporation of Nova Scotia. Large orders of rolling stock will shortly be given out.

The board of control, Toronto, calls for three separate tenders to be received by August 13, for 470 lengths of 36-inch cast-iron pipe; 830 lengths of 36-inch cast-iron pipe; and 51 36-inch special castings.

The National Steel Car Co., Hamilton, Ont., has let most of the contracts for its plant, a stipulation being made in all cases providing for a heavy penalty for failure to complete the work by the middle of next October. A bonus has also been offered to secure early delivery of the structural steel required. The company expects to make its first delivery of cars in November.

The following companies have been incorporated: The John Lewis Co., Ltd., Belleville, Ont., capital $30,000, to carry on a plumbing, heating and engineering business; provisional directors, Chas. F. Wallbridge, Ella E. Wallbridge and M. R. Doyle.

The Ritter Illuminating & Mfg. Co., Ltd., St. Catharines, capital $75,000, to manufacture electrical apparatus, etc.; provisional directors, Hans K. Ritter, Cornell Kmentt, and George B. Burson.

May Withdraw Securities.—Holders of securities of the Southern Iron & Steel Co., Birmingham, Ala., have been given until Aug. 15 to withdraw their securities, deposited with the reorganization committee for use in proposed merger plans, now abandoned, if they do not approve of the reorganization plan. It is thought that a large majority of the securities will be left with the committee.

PRODUCTION OF PIG IRON IN THE UNITED STATES IN THE FIRST SIX MONTHS OF 1912.

Statistics collected from the Manufacturers by The American Iron and Steel Association, all in Gross Tons.

Production in the First Half of 1911, 11,666,996 Gross Tons; Second Half of 1911, 11,982,551 Tons; First Half of 1912, 14,072,274 Tons.

Total Production of All Kinds of Pig Iron.

TOTAL PRODUCTION OF PIG IRON BY STATES.

States.	Blast Furnaces. In blast Dec. 31, 1911.	June 30, 1912. In.	Out.	Total.	Production—Gross tons. (Includes spiegeleisen, ferro-manganese, ferro-silicon, ferro-phosphorus, etc.) First half of 1911.	Second half of 1911.	First half of 1912.
Massachusetts	1	1	1	2	6,424	3,225	8,793
Connecticut	1	3	0	3			
New York	13	17	12	29	833,467	729,289	880,581
New Jersey	0	1	6	7	39,277	1,386	2,773
Pennsylvania	91	108	55	163	4,822,832	4,984,241	6,035,773
Maryland	2	2	3	5	131,531	124,285	107,027
Virginia	7	6	19	25	159,996	133,646	120,127
Georgia	0	0	4	4	1,200	.....	.....
Texas	0	0	4	4			
Alabama	22	19	30	49	809,795	902,416	887,512
West Virginia	3	2	2	4	130,455	161,017	129,155
Kentucky	2	1	7	8	46,493	48,709	24,017
Tennessee	8	9	10	19	165,722	158,926	145,076
Ohio	44	49	26	75	2,740,142	2,570,364	3,285,752
Illinois	14	20	6	26	882,807	1,225,195	1,304,227
Indiana	7	10	0	10	552,056	611,876	788,252
Michigan	8	10	5	15			
Wisconsin	4	3	4	7	147,477	129,330	153,420
Minnesota	0	1	0	1			
Missouri	1	1	1	2			
Colorado	3	3	3	6			
Oregon	0	0	1	1	197,322	198,646	199,789
Washington	0	0	1	1			
California	0	0	0	0			
Total	231	266	200	466	11,666,996	11,982,551	14,072,274

PRODUCTION OF BITUMINOUS COAL AND COKE PIG IRON.

New York	13	17	7	24	833,467	729,289	880,581
New Jersey	0	1	5	6	39,277	1,386	2,773
Pennsylvania	82	103	31	134	4,671,653	4,902,332	5,968,270
Maryland	2	2	2	4	130,901	124,285	106,377
Virginia	6	5	16	21	160,397	131,750	119,466
Georgia	0	0	2	2			
Texas	0	0	3	3			
Alabama	20	17	28	45	788,895	890,759	871,155
West Virginia	3	2	2	4	130,455	161,017	129,155
Kentucky	1	1	6	7	46,159	47,415	23,837
Tennessee	7	8	10	18	164,482	156,460	144,738
Ohio	43	48	25	73	2,739,517	2,569,087	3,285,511
Illinois	14	20	6	26	882,807	1,225,195	1,304,227
Indiana	7	10	0	10	542,193	624,044	808,258
Michigan	2	2	1	3			
Wisconsin	3	2	4	6			
Minnesota	0	1	0	1	226,431	221,643	195,903
Missouri	0	0	1	1			
Colorado	3	3	3	6			
Washington	0	0	1	1			
Total	206	242	153	395	*11,356,634	*11,784,662	*13,840,251

* Includes ferro-alloys made with coke and electricity, coke and natural gas, etc.

ANTHRACITE AND MIXED ANTHRACITE AND COKE PIG IRON.

New York	0	0	3	3	149,227	80,348	65,657
New Jersey	0	0	1	1			
Pennsylvania	6	3	19	22			
Total	6	3	23	26	149,227	80,348	65,657

PRODUCTION OF CHARCOAL PIG IRON BY STATES.

Massachusetts	1	1	1	2	6,424	3,225	8,793
Connecticut	1	3	0	3			
New York	0	0	2	2			
Pennsylvania	3	2	5	7	1,952	1,561	1,846
Maryland	0	0	1	1	1,429	1,896	1,311
Virginia	1	1	3	4			
Alabama	2	2	2	4	20,900	11,657	16,357
Georgia	0	0	2	2	1,574	3,760	518
Texas	0	0	1	1			
Kentucky	1	0	1	1			
Tennessee	1	1	0	1			
Ohio	1	1	1	2	625	1,277	241
Michigan	6	8	4	12	98,232	62,652	107,927
Wisconsin	1	1	0	1	29,999	31,513	29,373
Missouri	1	1	0	1			
Oregon	0	0	1	1			
California	0	0	0	0			
Total	19	21	24	45	*161,135	*117,541	*166,366

* Includes small quantities of pig iron and ferro-alloys made with charcoal and electricity.

TOTAL PRODUCTION OF PIG IRON ACCORDING TO FUEL USED.

Bituminous	206	242	153	395	11,356,634	11,784,662	13,840,251
Anth. & anth. & coke	6	3	23	26	149,227	80,348	65,657
Charcoal	19	21	24	45	161,135	117,541	166,366
Total	231	266	200	466	11,666,996	11,982,551	14,072,274

Miscellaneous Pig Iron Statistics.

PRODUCTION OF PIG IRON IN PENNSYLVANIA AND OHIO

	Districts.	Blast Furnaces. In blast Dec. 31, 1911.	June 30, 1912. In.	Out.	Total.	Production—Gross tons. (Includes spiegeleisen, ferro-manganese, ferro-silicon, ferro-phosphorus, etc.) First half of 1911.	Second half of 1911.	First half of 1912.
Pennsylvania.	Lehigh Valley	10	10	15	25	423,788	463,225	444,533
	Schuylkill "	9	11	7	18	375,973	346,292	427,482
	L. Susq. "	6	8	7	15	225,170	221,501	230,518
	Juniata "	2	2	5	7	51,518	42,106	61,329
	Allegheny Co.	35	43	4	47	2,488,508	2,627,934	3,074,961
	Shenan. Valley	12	16	8	24	637,625	614,719	945,029
	Miscel. bitum.	14	16	4	20	618,298	666,903	850,075
	Charcoal	3	2	5	7	1,952	1,561	1,846
Ohio.	Mahoning Val.	19	19	5	24	1,134,795	1,258,780	1,424,685
	Hocking "	0	0	1	1	827,976	749,552	938,232
	Lake Counties	10	13	4	17			
	Miscel. bitum.	8	9	7	16	594,005	462,173	724,410
	H. R. bitum.	6	7	8	15	182,741	98,582	198,184
	H. R. charcoal	1	1	1	2	625	1,277	241

PRODUCTION OF BESSEMER AND LOW-PHOSPHORUS PIG IRON.

New York	240,641	209,200	276,596
Pennsylvania	1,741,542	1,719,723	2,152,153
Maryland	130,901	124,285	106,377
Virginia, West Va., Kentucky, and Tenn.	173,284	197,202	138,216
Ohio	1,707,978	1,575,992	2,015,369
Illinois, Wisconsin, Colorado, and California	710,078	878,477	883,644
Total	4,704,424	4,704,879	5,572,355

PRODUCTION OF BESSEMER AND LOW-PHOSPHORUS PIG IRON IN PENNSYLVANIA AND OHIO BY DISTRICTS.

Pennsylvania.	Lehigh Valley	91,720	82,267	101,542
	Schuylkill Valley			
	Lower Susquehanna Valley	44,932	42,373	41,802
	Allegheny County	1,070,758	1,007,999	1,253,258
	Shenango Valley	534,132	587,084	755,551
	Miscellaneous bituminous			
Ohio.	Mahoning Valley	803,726	836,862	939,257
	Lake Counties	478,229	383,802	571,205
	Hanging Rock bituminous	426,023	355,328	504,907
	Miscellaneous bituminous			

PRODUCTION OF BASIC PIG IRON, NOT INCLUDING CHARCOAL IRON.

New York and New Jersey	158,293	163,472	161,275
Pennsylvania—Allegheny County	1,335,712	1,548,215	1,719,000
" Other counties	1,128,377	1,156,458	1,358,734
Virginia	178,012	267,880	334,848
Alabama			
Ohio	518,544	503,197	762,752
Indiana and Illinois	481,690	742,564	928,000
Michigan, Missouri, and Colorado	134,859	112,747	134,767
Total	3,935,487	4,584,533	5,405,376

PRODUCTION OF SPIEGELEISEN AND FERRO-MANGANESE.

Pennsylvania	66,577	80,235	79,646
Illinois	11,018	26,888	13,515
Total	77,595	107,123	93,161

PRODUCTION OF ALL KINDS OF PIG IRON FROM 1907 TO 1911.

States—Gross tons.	Production—(Includes spiegeleisen, ferro-manganese, etc.) 1907.	1908.	1909.	1910.	1911.
Massachusetts	19,119	13,794	18,388	16,582	9,649
Connecticut					
New York	1,659,752	1,019,495	1,733,675	1,938,407	1,562,756
New Jersey	373,189	225,372	294,474	264,781	40,663
Pennsylvania	11,348,549	6,987,191	10,918,824	11,272,323	9,807,073
Maryland	411,833	183,502	286,856	326,214	255,816
Virginia	478,771	320,458	391,134	444,976	293,642
Georgia	55,825	24,345	26,072	14,725	1,200
Texas					
Alabama	1,686,674	1,397,014	1,763,617	1,939,147	1,712,211
West Virginia	291,066	65,551	228,282	174,661	291,472
Kentucky	127,946	45,096	86,371	100,509	95,202
Tennessee	393,106	290,826	333,845	397,569	324,648
Ohio	5,250,687	2,861,325	5,551,545	5,752,112	5,310,506
Illinois	2,457,768	1,691,944	2,467,156	2,675,646	2,108,002
Indiana	436,507	348,096	964,289	1,250,103	1,163,932
Michigan					
Wisconsin	322,083	148,938	348,177	307,200	276,807
Minnesota					
Missouri					
Colorado	468,486	313,071	382,766	428,612	395,968
Washington					
California					
Total	25,781,361	15,936,018	25,795,471	27,303,567	23,649,547

BRITISH IRON TRADE

Settlement of Puddlers' Wage Question Brings Relief.

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., July 20.

Pig Iron.—There has been a slight rise in pig iron values this week, and increasing scarcity. Consumers' reserves are rapidly melting away as the result of a general determination not to buy beyond current needs. Yet the consumption still goes beyond production, and stocks, everywhere, are being used up. During the present month there has been a decline of 11,000 tons in Connal's stores, leaving only 300,000 in stock. Prices have advanced a little on the week, yesterday's quotations being 57s 5d ($14.02) with 57s 9d ($14.10) one month, and 58s 2d ($14.20) three months. Prices increased 7d in two days, but an element of fluctuation has been introduced owing to the operations of London and Glasgow speculators. Nobody is getting more pig iron than is necessary for his daily requirements. While normal conditions are approaching in the working of the furnaces, the scarcity of coke prevents consumers' requirements being fully met. Forge iron is remarkably scarce, and now approaches the price of foundry iron. The hematite production on the east coast is surpassing all records and more furnaces would be restarted if their owners could be assured of a sufficient supply of ore and coke. For mixed numbers, producers realize 73s 6d ($18) for early deliveries, the best price for the last five years.

Finished Material.—All branches of the finished iron and steel market show increasing strength. In the Midland district great satisfaction is expressed over the settlement of the puddlers' wages question, which is now practically assured. As a result of a series of meetings of the standing committee of the Midland iron and steel wages board the following resolution has been adopted and sent out for sanction to both the firms represented by the board and their workmen:

"That a bonus be given to puddlers of sixpence per ton and that the hours of work for a puddling furnace be considered 11 hours for six heats and nine and one-half hours for Saturday on the weekly average, but that in the case of general excess of this time the operative may bring forward such case for the consideration of the standing committee. This bonus to come into operation from Aug. 5, the date of next ascertainment. That the notice to terminate the sliding scale, dated June 2, 1912, is withdrawn as from this date."

The settlement represents an important compromise arrived at by concessions on both sides. The men, in their June resolution, asked for ninepence increase for puddlers, and the employers have now given them sixpence. This should bring to them an increase of 4 or 5 shillings a week. The provisions as to hours will tighten up certain works, where much dilatoriness and overlapping of day and night turns has been complained of. Under the original resolution, the men proposed to abolish the sliding scale in October, a contingency which the ironmasters were very anxious to avoid. The withdrawal of that resolution leaves the scale intact. The settlement has been a good deal assisted by the anxiety of employers to attract a large number of workmen to the puddling furnaces. At a great many of the forges, there are idle furnaces, which could be operated if men could be found. It is especially unfortunate that while mills have been improved to increase output, the supply of raw material from the puddling furnaces and forges has decreased. The bringing into operation of the higher rate at the beginning of August is a very important concession, as it gives the men an advance several months earlier than they would have got it under their own original scheme, and as the ascertainment due at the beginning of August must show a large rise in price, the men may now look forward to more substantial rates of wages than they have had for many years past. The settlement has generally been quoted as another triumph for the wages board which has a distinguished record extending over 40 years in the pacific settlement of disputes.

The steel trade is extremely busy, with all the British mills full of work and making good profits. They could probably realize further advances, but are inclined to hold their hands rather than harrass the ship building trade, which is just now enjoying an extraordinary boom, and at the same time encourage foreign competition. There is still very little Belgian material coming in, and billets and bars are decidedly scarce. Merchants could book many thousands of tons if foreign material were available. A peculiar feature is that while there was never so much constructional work in the country, this line of business is almost unprofitable, owing to the entire absence of any agreement by constructional houses.

ATLAS SALE

Has Been Postponed—Bid Will be Ready on Aug. 12.

Indianapolis, July 29.—By mutual agreement of all parties concerned, the sale of the Atlas Engine Works, which was to have been made by the receiver today, has been postponed to Aug. 12. The delay was authorized on the statement of M. L. Thomson, an attorney, that he represents interests which will be ready to submit a bid by Aug. 12 at a figure higher than that offered by Detroit interests. Mr. Thomson is also attorney for the Baldwin Locomotive Works of Philadelphia, a heavy creditor of the company, which has been opposed to a hasty sale of the Atlas plant.

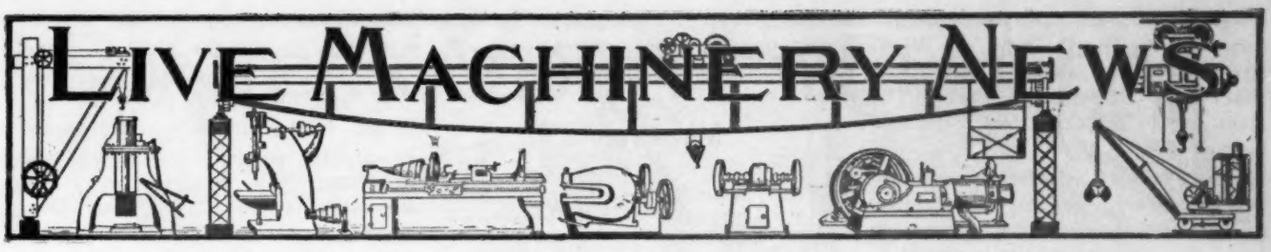
Mr. Thomson says that a number of wealthy men are organizing a company to bid on the Atlas plant. What they contemplate making is not known, as Mr. Thomson refuses at this time to reveal their identity or their plans. Fred C. Gardner, receiver for the Atlas company, agreed to the delay in the sale, after being assured that another bid was in sight.

It is reported that the Detroit interests proposing to bid include Walter E. Flanders, a prominent motor car manufacturer. It is known that if these interests obtain the plant, motor cars will be manufactured in it on a large scale. Under the terms of sale, the purchaser must assume a bond issue of $1,050,000 secured by a mortgage; pay off another bond issue of $105,000, and also pay receivership costs and mercantile accounts, amounting to about $80,000.

Mr. Gardner has completed an inventory and appraisement of the plant, as follows: Cash on hand, accounts and such items, $234,905.40; buildings, $518,056.50; grounds, $117,600; machinery, $351,845.13, and sprinkling and water system, $50,000; total, $1,135,723.77.

The Insley Mfg. Co., manufacturer of structural iron, recently suffered a loss of $12,000 by fire at its plant, including many valuable patterns and blue prints. The fire was started in a one-story frame building by the bursting of a high pressure valve on a crude oil forge.

The Noelke-Richards Iron Works has been awarded the contract for fabricating and erecting the structural iron for the Starks building, Fourth and Walnut streets, Louisville, Ky. The building is to be a 14-story structure and the contract calls for 2,200 tons of structural steel.



In New York, it is expected that July will prove to have been the best month for machine tool dealers since 1910. This is true not only of orders booked but also of the volume of inquiry. A list of specifications for machine tools aggregating in value close to $1,000,000, is being prepared by the Harriman lines and numerous industrial concerns are about ready to send out inquiries for manufacturing equipment. Prospects for August business are bright and dealers are considering delivery date for the first time in two years. The King Sewing Machine Co., Buffalo, ordered $50,000 worth of equipment last week. More inquiries are expected from this company for equipping four additional buildings at Buffalo, plans for which are now in preparation.

In Pittsburgh, inquiries are more numerous and machine tool dealers are expecting more active buying of machinery during the remainder of the year. Plants are being operated at more than 75 per cent of capacity, and some of the larger interests are running double shift. New business has been mostly in small lots, the aggregate representing a good volume, and prices are higher than for some time. Roll makers are particularly busy at this time.

In Cleveland, the volume of machinery orders and prospective business continues to expand. Many dealers who ten days ago were forecasting a slump in the aggregate business for July compared with the preceding month, now state that June's record was equaled. The improvement during the latter half of last month was general, all lines benefiting. A number of inquiries, none large but in the aggregate representing a good sized total, are in the market. Machine tool dealers state that they note a more optimistic feeling on the part of some companies toward plant extensions.

In Cincinnati, the machine tool business is a little better than it has been for some time, and some of the makers are looking forward to a good output in August. July was considered a better month than June and about as good as the corresponding month last year. The business, however, is not as evenly divided. Those companies making lathes still enjoy the best business, two of the large plants which turn out lathes in excess of any other product, running to full capacity, and another to about 90 per cent capacity. The second-hand machinery trade is rather dull, but there are still rumors in the market of coming business from southern territory. Local manufacturers of small electrical machinery are also well supplied with orders, and the majority are running to full capacity. There are several good machinery lists before the trade at present, including that of the De La Vergne Machine Co., of New York.

Machine Tools

The Warner Elevator Co., Cincinnati, which is building a new plant, is in the market for equipment.

It is expected that the Baltimore & Ohio railroad will shortly be in the market for an extensive list of machine tools, and several cranes.

The Eagle Mfg. Co., Cumminsville, Cincinnati, is in the market for considerable machinery, including lathes, drills and presses.

The Wadsworth Watch Case Co., Dayton, Ky., will soon purchase an assortment of light machinery, including several precision lathes.

The Missouri Pacific Railroad Co. has closed for a considerable part of the list of shop equipment put out some weeks ago. The original inquiry called for about $50,000 worth of machinery.

The Herschede Hall Clock Co., the plant of which is located at 1011 Plum street, Cincinnati, will shortly buy some new equipment, among which will be several precision lathes.

Owners of the Toppenish Iron Works, Toppenish, Wash., seriously damaged by fire, are quoted as saying that they will soon order new machinery for a plant to be operated in a leased building. They expect to build a concrete plant next year, it is said.

Power Plant Equipment

Henry Bros., Taylorsville, Ky., have been awarded a franchise for operating an electric light system, and will purchase machinery for their plant in the near future.

Peabody College, Nashville, Tenn., has let contracts for the construction of buildings for its power plant. Equipment will be purchased shortly. Bruce Payne is president.

New Construction

The Swartz Foundry Co., Detroit, has let contracts for a brick foundry building.

The Lycoming Foundry & Machine Co., Williamsport, Pa., has awarded a contract for the erection of an aluminum foundry.

The Reading Steel Casting Co., Reading, Pa., has bought a tract in that city on which it will erect an addition to its works.

The Jewell Steel & Malleable Co., 373 Hertel street, Buffalo, has made plans to erect a one-story brick and frame addition to its foundry.

Rexroad Bros., Hutchinson, Kan., have been granted a permit for the erection of an addition, 40 x 84 feet, to their machine shop.

The William A. Hardy Sons Co., Fitchburg, Mass., brass founders, is having plans prepared for a brick building, to be erected this fall near the company's plant on Water street.

The Becker Milling Machine Co., Hyde Park, Mass., will erect a one-story concrete addition to its plant, 150 x 200 feet, and will shortly be in the market for planers and boring mills.

The Central Foundry Co., Terre Haute, Ind., is planning to rebuild its works in the east side of that city, being compelled to move from its present site on Clinton street owing to the erection of the Lake Shore freight house.

The Standard Brass Co., Detroit,

is erecting a two-story brick factory on the north side of Wight street, between Joseph Campau avenue and McDougall street. The plant will be 92 x 166 feet, estimated to cost $24,000.

The Pressed Steel Products Co., which is being organized by interests identified with the Petroleum Iron Co., is preparing to build a plant at Petroleum, Pa. The company proposes to manufacture products from the lighter gages of steel sheets.

The Hyatt Roller Bearing Co., Harrison, N. J., has awarded a contract to the David Henry Building Co., of Newark, N. J., for the extension of its plant. This addition will consist of a treatment building, which will be four stories, 71 x 110 feet. It will be of reinforced concrete construction.

The Hendee Mfg. Co., Springfield, Mass., one of the largest manufacturers of motor cycles in this country, plans to double its present output of machines. An addition 40 x 300 feet and five stories high will be made to its present plant that will employ about 400 additional men and increase the annual output of motor cycles to 35,000.

A permit has been issued to the Dixie Metal Culvert Co., Jacksonville, Fla., for the erection of a one-story galvanized iron plant, 50 x 60 feet, estimated to cost $1,500. The structure will be used only temporarily, as it is the intention of the company to replace the structure with a brick building in the near future.

The Crosby Co., Buffalo, advises that the contracts have been all let for its factory addition which will be 125 x 200 feet, four stories, of steel and brick construction. It will be erected for the extension of the company's business, sheet metal stamping. The equipment to be purchased for this addition will consist principally of stamping presses.

The Griffin Wheel Co., Chicago, chilled iron car wheels, is enlarging its Boston plant by building an extension to the foundry, a new machine shop and auxiliary buildings, for the purpose of increasing the output from 300 to 500 wheels per day. Work is also about to start on enlarging the St. Paul plant by the construction of buildings approximately 50 x 400 feet, which will increase the output from 450 wheels per day to 600. The foregoing capacities are measures in terms of railroad car wheels, but a considerable quantity of other work is done in the line of chilled iron castings for various purposes, such as rollers for crushing machinery. Most of the equipment for these extensions will be made in the company's own shops.

Miscellaneous

The Semet-Solvay Co., Syracuse, N. Y., will install an 1,875 kilovolt-ampere Curtis turbo-generator which is being furnished by the General Electric Co., Schenectady, N. Y.

The Fuller-Warren Co., Milwaukee, Wis., is arranging to equip its stove plant with electric drive and will install 61 motors ranging in capacity from 1½ to 50 horsepower. The motors are to be of the General Electric type.

A Bessemer converter is being installed by the Jones & Laughlin Steel Co. at Aliquippa, Pa., for use in connection with its open-hearth department for duplex process steel making. The converter will be ready for use some time this month.

The Willys-Overland Co., of Toledo, O., has filed notice of its proposed increase in capital stock from $6,000,000 to $15,000,000. Part of the new stock will be used in taking over the common stock of the Garford Co., Elyria, O., recently purchased.

The Galena Iron Works Co., Galena, Ill., has closed a contract to furnish O. P. Nason, Pipestone, Minn., with a crusher and all machinery for a grinding plant. The company has sold similar equipment to a Chicago man.

The Jackson Diamond Saw & Drill Co., 10 Wall street, New York, advises that it is incorporated for the purpose of manufacturing, selling and leasing patent stone cutting machinery, and says it is too early to give any estimate of the probable output.

The Riverside Malleable Iron & Steel Works has applied for a charter and contemplates locating in Pittston, Pa., where an option has been obtained on the old Spring Brook pumping station. The officers are: President, William Austin; secretary, G. R. Smallcomb; treasurer, F. W. McKown.

The plant of the Algoma Steel Co., at Sault Ste. Marie, will be closed down for about two weeks while a 35-inch blooming mill with a 55 x 60 engine, and a new 25-inch rail mill are being installed. These additions are expected to increase the output of steel rails by 50 per cent.

The M. Hoagland's Sons Co., Rockaway, N. J., advises that the fire, which recently damaged its plant burned the roof off of the foundry and compressor and engine and boiler rooms. The company is not yet ready to say what it will require in the way of machinery to put the plant in shape.

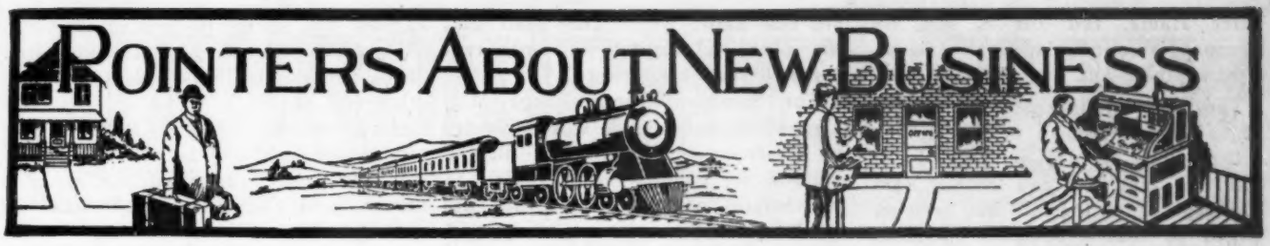
The new plant which the H. W. Johns-Manville Co. is building at Bound Brook, N. J., will be operated entirely by electric power. The power plant equipment will comprise one 1,000-kilowatt and one 1,500-kilowatt Curtis turbo-generators for which excitation will be furnished by a 35-kilowatt turbo-exciter and a 35-kilowatt motor generator set. The apparatus is being installed by the General Electric Co., Schenectady, N. Y.

The receivers of the Central Iron & Steel Co., Harrisburg, Pa., announce that they will deposit with the Girard Trust Co., of Philadelphia, funds to pay the coupons due Aug. 1, 1912, on the $1,239,000 of company 5 per cent bonds now outstanding. Checks will be mailed by the bond holders' protective committee for coupons on all bonds which have been deposited with the Girard Trust Co. under the bondholders' protective agreement.

The Emerson-Brantingham Co., Rockford, Ill., capitalized at $50,000,000, is being financed by Kuhn, Loeb & Co. and William Salomon & Co., and through their aid it has acquired the Geiser Mfg. Co., Waynesboro, Pa., the Gas Traction Co., Minneapolis, and the Reeves Co., of Columbus, Ind., which has 16 branches in this country and Canada. The last named organization is understood to have cost the holding corporation $2,500,000.

The Pequest Iron Co., Buttsville, N. J., has ordered a second ore dryer from the Ruggles-Coles Engineering Co., 50 Church street, New York. The total drying capacity, when the second installation is completed, will be 800 tons of iron ore per 24 hours, or 16 tons per hour for each dryer. The Pequest company is also erecting a magnetic concentrator for concentrating the ore after it has been passed through the dryers. These improvements will be completed in about three months.

The Burden Iron Works, Troy, N. Y., will equip its shop throughout with electric drive. In the power plant will be installed a 700-kilovolt-ampere Curtis turbo-generator which will be excited by a 50-kilowatt exciter, one 3-kilowatt, one 5-kilowatt, three 15-kilowatt and three 20-kilowatt transformers and switchboard apparatus. Sixteen motors will be installed for driving the various machines in the shop, varying from three to 100 horsepower capacity. The complete installation is being made by the General Electric Co., Schenectady, N. Y.



New Buyers

(In order to assist the post office in delivering letters to new concerns, it is suggested that the names of incorporators be written in the lower left hand part of every envelope addressed to such new companies.)

The following manufacturing companies have filed articles of incorporation:

The Melvin-Lloyd Co., Youngstown, O.; $10,000; foundry, machine and pattern shop; by Charles P. Melvin, George P. Lloyd, David Richards.

The Boston Stoker Co., Boston; $150,000; grates; by William F. Torrey, Quincy, Mass.; Thomas J. Reid, and Waldo L. Hutchings, Boston.

Just Tungsten Lamp Co., Cleveland; $10,000; by R. B. Richardson, A. H. Otis, M. J. O'Donnell, A. G. Newcomb, M. L. Tenne.

Graf Stove & Range Co., Louisville, Ky.; $100,000; by Henry J. Graf, Theodore H. Graf and William T. Hale.

The Engineering Appliance Co., Covington, Ky.; $2,500; by Paul G. Schwarz, Wilbur H. Kaiser and Stephen H. Hollen.

The Rivett Lathe & Grinder Co., Boston; $700,000; lathes; by John E. Lazenby, Lynn, Mass.; Henry S. Thompson, Concord, Mass.; Edward T. Roche, Boston.

C. O. R. Cutter Co., Cleveland; $36,000; machine tools; by C. F. Heinkel, E. C. Heinkel, E. F. Aumuth Jr., H. R. Sydow, Anna R. Sydow and Leroy E. Hulet.

The Automatic Endorsing Machine Co., Manhattan, New York City; $125,000; machinery and hardware; by L. L. Lucas, Erie, Pa.; F. W. Yates and G. P. Beebe, New York City.

Allyne-Ryan Foundry Co., Cleveland; $100,000; steel and iron castings and metal products; by George Cook Ford, Sydney E. Harrison, E. D. Comer, P. M. Alden, E. R. Robertson.

Golden Steel Co., Manhattan, New York City; $10,000; to manufacture steel, iron, etc.; by Ascher Golden, 456 Fourth avenue; Abraham Breithard, Theodore Slegel, both of 220 Broadway.

Foley Wardwell Mfg. Co., Cleveland; $20,000; to manufacture automatic meat saws, filers, etc.; by Hugh B. Foley, F. W. Wardwell Jr., George W. Shaw, F. A. Shepard, T. B. Bolton.

H. S. Metal Specialty Co., Cleveland; $10,000; to manufacture metal specialties and novelties; by Frank T. Cullitan, E. Sanderson, William G. Stuber, Gere Hagenbach, A. B. Bardwell.

J. C. Metcalf Machinery Co., Boston, $20,000, to manufacture and deal in wood and paper box machinery, etc.; by directors, John C. Metcalf, president; Francis E. Tebbetts, 102 Pearl street, treasurer, and John A. Metcalf.

The Continental Steel & Supply Co., Manhattan, New York City; $10,000; nails; by James Rochelle, 1228 Clay avenue. Henry H. Friend, 333 East Fifty-second street, New York City, and Gustave J. Rose, 138 State street, Brooklyn.

The Fillmore Iron Works Co., Manhattan, New York City; $10,000; ornamental iron work; by Samuel Friedman, 599 Saratoga avenue, Brooklyn, N. Y.; Barnet Brainin, 234 West Twenty-eighth street, and Adolph Weiss, 337 East Forty-ninth street, New York City.

General Industrial

The Sharon Steel Hoop Co., Sharon, Pa., has increased its capital stock from $700,000 to $2,500,000.

The Read Machinery Co., York, Pa., has increased its indebtedness from nothing to $18,600.

The Braeburn Steel Co., Braeburn, Pa., has increased its capital from $200,000 to $400,000.

The Flannery Bolt Co., Pittsburgh, has increased its capital from $300,000 to $750,000.

The Bryant Steel Wheel & Rim Co., Columbus, O., has reduced its capital from $15,000 to $6,000.

The plant of the Central Foundry Co. now in course of erection at Tuscaloosa, Ala., is expected to be completed and started up this week.

The Malleable Iron Fittings Co., Branford, Conn., advises that it is doing some repair work, but no building.

The United States Filter Co., 1228 Broadway, New York, plans to establish a large factory at Phillipsburg, N. J.

The Osceola Silica & Fire Brick Co., Pittsburgh, is installing a new fire clay mill in its plant at Osceola Mills, Clearfield Co., Pa.

The Lumen Bearing Co., Buffalo, has placed contracts for the erection of a fireproof, two-story machine shop addition to its plant, Sycamore street and the Belt Line, Buffalo.

The Johnson City Foundry & Machine Co., organized recently, has acquired the plant of the Johnson City Foundry & Machine Works, Johnson City, Tenn.

The Sharon Foundry Co., Wheatland, Pa., has awarded a contract for a number of repairs and improvements to its plant. One of the furnaces is to be changed from oil fuel to gas.

The Nashville Bridge Co., Nashville, Tenn., has the contract for the erection of 1,500 steel towers to carry the transmission lines of the Eastern Tennessee Power Co. from the Ocoee river to Nashville.

A license has been issued to the Chicago Tool Co. of New Jersey, capitalized at $7,500,000, to do business in Missouri, locating in St. Louis, where it has been incorporated with a capital of $125,000.

The S. S. Wenzell Machine Co., Philadelphia, advises that it is re-incorporating in Pennsylvania and does not need any machines or tools. Its new building is complete. Officers are the same as in the present company.

The Moore Construction Co., Charleston, West Va., has the contract for constructing a 12-story steel and fireproof office building for the First National Bank of Huntington, West Va.

John F. Moul, E. J. Welty, A. E. Baum, C. F. Andrews and W. G. Graham, have incorporated the Modern Sheet Steel & Machine Co., of Canton, O., with a capital of $100,000.

A cantilever bridge of the heaviest type will be erected near Owensboro, Ky., by the Owensboro & Rockport Bridge & Terminal Co., which plans to begin work before Sept. 1. T. H. Hazelrigg, of Owensboro, is chief engineer.

The Crawford & McCrimmon Co., Brazil, Ind., is quoted as making an official denial that it is about to move its foundry and machine shops to

Terre Haute, Ind. It is said the company is contemplating an enlargement of the plant.

The Joliet Rolling Mill Co., Joliet, Ill., after a shutdown of six months, will start up again about Aug. 15, to roll merchant bar and refined iron. The capacity of the mill has been enlarged so that a complete range of sizes will be produced.

A charter has been issued to the Wright Engine Co., of Pittsburgh, with a capital of $1,000,000. C. D. Scullig, C. B. Mehard, of Pittsburgh; and H. W. Davis, of Wilmington, Del., are incorporators. The company will manufacture gas engines.

A new motor car manufacturing company is negotiating for a factory site in Washington, Pa. The Croxton Motor Car Co. is now building a taxicab plant in Washington which will be placed in operation this year.

The Denmark Machine Works, Denmark, S. C., recently incorporated, advises that it has not made detailed plans regarding buildings, equipment, etc. It will manufacture an article of merit in connection with its business.

The A. M. Byers Co., Pittsburgh, has filed notice at Harrisburg of an increase in capital stock from $1,000,000 to $1,200,000. The new capital is provided for improvements and extensions, necessitated by the rapid growth of the company.

The Wilson Machine Co., Des Moines, Ia., has leased the property of the National Starch work in that city, and the foundry of the company and the engine factory, now in different quarters, will be combined in the new location, where the plant's capacity will be trebled.

The R. H. Howes Construction Co., 105 West Fortieth street, New York city, has taken a general contract from the New Process Rawhide Co., Syracuse, N. Y., to erect a four-story steel and concrete factory. The building will be 150 x 65 feet. Considerable new machinery will be installed.

The Enameled Tank Co., Kalamazoo, Mich., manufacturer of iron porcelain enameled closet tanks, whose plant was recently damaged by fire, advises that only a part of the works was destroyed. It has been repaired. The company is not in need of any machinery.

The Follansbee Bros. Co., Pittsburgh, has filed notice of an increase in capital stock from $1,000,000 to $2,000,000. The officials of the company state that the increase will not involve a further enlargement of the plant, but covers the improvements that have already been made and are now under way. They state that the additional capital will only represent actual investment.

The Southern Queen Range Mfg. Co., which operates a stove foundry in Chattanooga, Tenn., has filed a petition in voluntary bankruptcy in the federal court. Its liabilities are $60,296, and its assets total $27,430. The concern is the successor of the T. A. Snow Co.

The Valley Machine Co., Parkersburg, W. Va., has been incorporated at Charleston, West Va., with a capital of $150,000, to operate a machine shop and foundry. The incorporators are B. B. Putnam, Marietta, O.; James Turpin, Dayton, O.; Ferguson O'Connor, R. G. Stiles and John Marshall, Parkersburg, W. Va.

The Commercial Iron & Supply Co. has opened an office at 853-877 Front street, Cincinnati, and is doing a general scrap iron and metal business, dealing in iron and steel scrap, railway and mill supplies, bar iron and pig iron metals. S. T. Rice and F. H. Derfus are members of the company.

Receivers have been appointed for the Wilkinson Foundry & Mfg. Co., Bridgeport, Pa., manufacturer of stokers and engineering specialties. Jos. C. Laird and Frederick H. Hill have been named as the receivers. The company is capitalized at $200,000 and the outstanding liabilities are announced as $20,000 in excess of mortgages of $28,000 on real estate. Quick assets are small.

Fires

Fire destroyed the testing laboratory of the Carnegie Steel Co. at the Homestead, Pa., works last week. The damage was not serious excepting the loss of records of ordnance tests preserved by the government inspectors. The loss amounted to $104,000.

The recent fire at Vancouver, B. C., which caused heavy loss, badly damaged the A. B. C. Motor Co.'s buildings, with most of their contents, Gibbs' tool works, the British Columbia Electric Railway car sheds, and the plants of the Canada Malleable Steel Range Co., and the Tudhope Motor.

Trade Notes

The Sharpsville Furnace Co. has removed its offices from Cleveland, to the First National Bank building, Chicago.

The Eclipse Railway Supply Co., Cleveland, has removed its offices from 1006 Garfield building to 4909 Luther avenue, that city.

The offices of the Ohio Machine & Boiler Co., formerly located at 1201 West Eleventh street, Cleveland, have been removed to 1501 University road, that city.

Shimmer & Co., of Philadelphia and Pittsburgh, will be selling agents of the newly organized Kennerdell Silica Sand Co., Pittsburgh, with offices at 1511 Oliver building, Pittsburgh. The quarry of the Kennerdell company will have a 200-foot face, and the product will be high-grade open-hearth steel casing and glass sand.

Order New Tax Review

The Michigan state tax commission will again review and re-assess, if necessary, the iron ore properties of the upper peninsula of Michigan. These lands were assessed last summer. Charges of favoritism have been brought by the governor of Michigan against a certain mining expert whose figures were followed in the last assessment and the tax commission has decided to re-appraise the properties.

Professor Leith, of the University of Wisconsin, furnished the figures last summer, upon which the assessments were based. Later he filed a supplementary report to the effect that his original figures were too high and the tax commission reviewed the holdings of the Cleveland-Cliffs Iron Co. and the Brotherton company, subsequently reducing the assessments about $1,000,000.

Sand Blast Installation

The W. W. Sly Mfg. Co., Cleveland, is erecting a 40 x 60-foot, two-story steel and concrete addition to its plant, which will be devoted to the manufacture of sand blast equipment and dust arresters. Recently a contract was received for the installation of two steel sand blast rooms, including separators and dust arresters, in the foundry operated by the Bettendorf Axle Co., Bettendorf, Ia. This installation is a duplicate of one made in this plant by the Sly company several months ago. Three steel sand blast rooms with dust arresters, sand separators, etc., also are being installed in the plant of the Buckeye Steel Castings Co., Columbus, O. At the plant of the Gould Coupler Co., Depew, N. Y., an installation of four steel sand blast rooms will be made.

The National Cash Register Co., incorporated under the laws of New Jersey, is authorized to increase the amount of capital it may use in Ontario from $90,000 to $150,000.